OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

MEMORANDUM **May 7, 2019**

TO: Phillip Fielder, P.E., Permits and Engineering Group Manager

THROUGH: Phil Martin, P.E., Existing Source Permits Section Manager

THROUGH: Amalia Talty, P.E., Existing Source Permits Section

FROM: David Pollard, ROAT

SUBJECT: Evaluation of Permit Application No. **2008-100-C (M-6) PSD**
Pryor Chemical Company
Pryor Mid-America Industrial Park
Lat. 36.242761º; Long. - 95.278481º
Section 3, Township 20N, Range 19E
Facility ID: 1736
Directions: From Highways 412 and 412B, go approximately 5 miles north on 412B to main plant entrance.

SECTION I. INTRODUCTION

Pryor Chemical Company (PCC or applicant) is an integrated synthetic fertilizer manufacturing plant (SIC 2873) located in the Pryor Mid-America Industrial Park. The plant was previously completely out of service when LSB Industries, parent company of PCC, purchased the plant from Wilgro and initiated permitting through PCC to restart the plant in separately permitted phases. The plant is PSD (Prevention of Significant Deterioration) for various criteria pollutants.

Permit No. 2008-100-C PSD was issued February 23, 2009 to start up a select group of sources. A problem in meeting the BACT (Best Available Control Technology) NO_X limit for the Ammonia Plant #4 Primary Reformer and the replacement of burners resulted in the application for Permit No. 2008-100-C (M-1) PSD, to address PSD and a BACT study and trial limit. In the meantime, concurrent work on an application to start up additional sources was ongoing and Permit No. 2008-100-C (M-2) PSD was issued on May 5, 2012. Based on their experience with the Ammonia Plant #4 Primary Reformer, PCC anticipated the same issues with Ammonia Plants #1 and #3, and so a BACT study and trial limit for those reformers were built into Permit No. 2008-100-C (M-2) PSD. Because additional time was needed to assess and respond to comments received during the Public and EPA review periods for Permit No. 2008-100-C (M-1) PSD, that permit did not get issued until July 17, 2012. Ammonia Plants #1 and #3 have since been sold and removed from the facility. The application for the Title V operating permit had been submitted June 7, 2010, but was held pending issuance of Permit Nos. 2008-100-C (M-1) PSD and (M-2) PSD, and continued pending while processing of an application submitted June 15, 2012 nee to modify Ammonia Plant #4 to be issued as Permit No. 2008-100-C (M-3). An (M-3) permit was drafted and ready to be reviewed by EPA (US Environmental Protection Agency) when DEQ decided to place all permitting activity on hold while compliance issues were being evaluated by both AQD and EPA. Since then, PCC has submitted additional permit modification applications. PCC currently has numerous permit applications and amendments on file with AQD, all pending processing, as well as air impact analyses and also BACT reports and amendments for the BACT reevaluation required by Permit Nos. 2008-100-C (M-1) PSD and (M-2) PSD. Applications and documents pending processing are detailed in the following section titled "Summary of Permit Applications and Submittals Affecting this Permit". In consideration of the highest level of permitting required for any one application, this permitting action will consolidated all applications into one Tier II permit process involving both Public and EPA reviews. The draft and EPA proposed permit has finished both public and EPA reviews. The only comments received were from the applicant, submitted on April 4, 2019. Those comments and DEQ's responses are presented in SECTION X of this memorandum. PCC also submitted on April 4, 2019, corrections and updates to the list of insignificant activities. The request to separate out the Ammonia Storage Flare Pilot as an insignificant activity resulted in the same action on other facility flares.

Summary of Permit Applications and Submittals Affecting this Permit

2008-100-TV, received June 7, 2010 submitted for the operating permit for the original PSD construction permit.

Notification dated November 8, 2010, received November 9, PCC was installing additional process equipment at Ammonia Plant #4 that would not increase emissions. The equipment included several vessels, two mole sieves, a cold box (chiller) and associated piping.

Amendment to Permit No. 2008-100-TV dated December 15, 2010, requesting the following changes:

- Correct production rate for Ammonia Plant #4 to 770 tons per day. The increase from 700 TPD to 770 TPD was evaluated and in Permit No. 2008-100-C (M-1) PSD.
- Remove condensate throughput limit and replace it with limit on stack gas flow rate at the Condensate Steam Flash Drum. The proposed limit based on maximum design capacity is 1,050 lbs/hr.
- Increase hourly and annual ammonia limits at the Condensate Flash Steam Drum to reflect current operations. The proposed limits are 5.40 lbs/hr and 23.64 TPY.
- Revise hourly and annual emissions limits for VOC from the Condensate Flash Drum to 10.4 lbs/hr and 45.6 TPY, consistent with the maximum process design capacity for Ammonia Plant #4. Increased ammonia production will result in increased steam flow, condensate generation, and VOC emissions.
- Revise Specific Condition No. 2 to include the use of process off-gas as fuel for the Ammonia Plant #4 Primary Reformer.
- Revise monitoring condition for Condensate Steam Flash Drum from "The condensate flow shall not exceed 80,064 pounds per hour, or whatever maximum rate is necessary to maintain methanol emissions at or below 9.5 tons per year", to "The stack gas flow from the Condensate Steam Flash Drum shall not exceed 1,050 pounds per hour,".

- Revise performance test methods for the Condensate Steam Flash Drum to replace Method 25A with Method 624 and Methods 308 and 320 by GC/FID 120P030.M.
- Revise hourly nitric acid production rate limits for Nitric Acid Plants #1, #3 and #4 to 10.0 tons/hr, 7.5 tons/hr and 16.7 tons/hr, respectively consistent with maximum capacities.
- Revise annual NO_X emissions limits for Nitric Acid Plants #1, #3 and #4 from 58.2 tons/year, 44.2 tons/year and 159.9 tons/year to 67.2 tons/year, 50.4 tons/year and 182.5 tons/year, respectively, for a total increase of 37.8 tons/year, consistent with the revised maximum process design capacities and to limit the increase in NO_X emissions to below the significance level for NO_X of 40 TPY.
- Add hourly and annual carbon monoxide emissions limits for Nitric Acid Plants #1 and #3 to account for fuel combustion at the fumeabators. Fuels will include natural gas, purge gas, or syngas.

  Nitric Acid Plant #1: 4.0 lbs/hr-CO; 16.8 TPY-CO
  Nitric Acid Plant #3: 3.0 lbs/hr-CO; 12.6 TPY-CO

- Revise daily nitric acid production rates for Nitric Acid Plants #1, #3 and #4 to 240 tons/day, 180 tons/day and 400 tons/day, respectively based on design capacities.
- Revise PM_{10} emissions limit for each Nitric Acid Plant Preheater (EU ID 401, 402 and 403) to 0.11 lbs/hr.
- Add provisions for alternate CO emissions venting scenarios from CO_2 Plant Tower, replacing Carbon Dioxide Vent (EU ID 500) with Carbon Dioxide Tower Vent (EU ID 501a) and Carbon Dioxide Plant Vent (501b).
- Revise the compliance demonstration method where it states "*Compliance with the carbon dioxide venting and carbon monoxide emission limits shall be demonstrated by multiplying the actual daily ammonia production total by 1.25, which is the stoichiometric ratio of CO_2 generated from the ammonia production process with a contingency; multiplying that product by an industry established carbon monoxide percentage of 0.1; and then dividing the result by the process equipment (i.e., ammonia process equipment) operating hours for that day*", replacing "*carbon dioxide venting*" with "*carbon monoxide venting*", and replacing "*percentage of 0.1*" with "*ratio of 0.1 lbs CO per ton CO_2*".
- Revise hourly and annual emissions limits for CO from the CO_2 Tower Vent (EU ID 501a) and the CO_2 Plant Vent (EU ID 501b) from 3.65 lbs/hr and 15.99 TPY for the CO_2 Plant Vent (EU ID 501) to 4.0 lbs/hr and 17.6 TPY for the CO_2 Tower Vent (EU ID 501a) and/or the CO_2 Plant Vent (EU ID 501b).
- Revise Specific Condition No. 1.G to clarify that it includes the neutralizer vents for both Nitrate Plant #1 and Nitrate Plant #2

  "EU IDs 601 and 602 – Ammonia Nitrate Plants #1 and #2 Neutralizers Vents"

- Revise Specific Condition No. 1.G ammonia emissions limits for Ammonia Nitrate Plant #1 (EU ID 601) and Ammonia Nitrate Plant #2 (EU ID 602) from a combined total of 0.8 lbs/hr and 0.4 tons/year to a combined limit of 2.4 lbs/hr and 0.6 tons/year.
- Revise Specific Condition No. 1.G to PM/PM_{10} limits from a combined total limit of 2.1 lbs/hr and 0.6 TPY to 1.2 lbs/hr and 0.6 TPY. The current emissions are based on AP-42 which includes non-condensable while the emissions consist of only condensables.

- Revise emissions from Boiler #1 to reflect a reduction in heat input capacity from 80 MMBtu/hr to 53 MMBtu/hr.
- Revise Specific Condition 1.Q to clarify that the limits on fugitive emissions are a plant-wide limit.
- Revise Specific Condition No. 1.Q to update component counts for fugitive emissions.
- Revise Specific Condition 10.b to include additional sources having emissions less than 5 TPY.

Support documentation related to EPA policy and guidance pertaining to BACT limit changes to support the proposed trial BACT analysis, received May 3, 2011.

2008-100-TV (M-3) received June 15, 2012, submitted to replace an existing six-bottle design ammonia converter equipped with electric startup heater, by a one-bottle converter equipped with a natural gas fired startup heater, at Ammonia Plant #4. In addition to the new ammonia converter & heater, PCC requests the following list of changes to correct inconsistencies between Permit No. 2008-100-C (M-1) PSD and Permit No. 2008-100-C (M-2) PSD.

- <u>Permit No. 2008-100-C (M-1) PSD</u>
- Specific Condition 1.E - Revise the allowable emissions table and associated text to be consistent with the table and language in Permit No. 2008-100-C (M-2) PSD, Specific Condition 1.G.
- Specific Condition 1.L - Revise the circulation rate of Cooling Tower #1 to be consistent with the rate established in Permit No. 2008-100-C (M-2) PSD, Specific Condition 1.N. The correct rate is 2,592,000 gallons per hour.
- Specific Condition 10 - Revise the testing deadline(s) for the initial performance tests (IPT) to be consistent with those deadlines in Permit No. 2008-100-C (M-2) PSD, Specific Condition 10, which is consistent with the IPT deadline requirements in 40 CFR Part 60.
- Specific Condition 11 – Revise the insignificant activities list to be consistent with the IA list in Permit No. 2008-100-C (M-2) PSD, Specific Condition 11.
- Compliance Schedule - Revise the schedule in either Permit No. 2008-100-C (M-1) PSD or No. 2008-100-C (M-2) PSD for consistency, as appropriate. [DEQ editorial comment: The compliance schedule from the (M-1) permit has the correct wording.]

- <u>Permit No. 2008-100-C (M-2) PSD</u>
- Specific Condition 1.A; For the following table headings, replace EUI ID 101 with EUD ID 103 and EUD ID 105 as shown.
  EU ID 103 - Ammonia Plant #1 Primary Reformer (60 MMBtu/hr)
  EU ID 103 - Ammonia Plant #1 Auxiliary Heater (28 MMBtu/hr)
  EU ID 105 - Ammonia Plant #3 Primary Reformer (64 MMBtu/hr)
  EU ID 105 - Ammonia Plant #3 Auxiliary Heater (28 MMBtu/hr)
- Specific Condition 1.E.ii;
- For CO emissions from the nitric acid plants, the header for the annual limits should be revised to (ton/yr) instead of (lb/ton).
- Specific Condition 11, Insignificant Activities, CO_2 Plant Ammonia Recovery Tank; revise capacity from 1,128 gallons to 2,024 gallons.

2008-100-TV (M-4) received March 25, 2013, submitted for a rental boiler (Boiler #3) and alternate operating scenario.

Amendment to Application numbered as Permit No. 2008-100-TV (M-4) received May 28, 2013.

- Correct calculations of PM, PM_{10} and $PM_{2.5}$ emissions from Primary Reformers - Ammonia Plants #1, #3, and #4; Converter Startup Heater - Ammonia Plant #4; Ammonia; Nitric Acid Preheaters – Nitric Acid Plants #1, #3, and #4; and Boilers #1, #2, and #3 to reflect that based on Footnote C of AP-42, Table 1.4.2, all PM (total, condensable, and filterable) is assumed to be less than 1.0 micrometer in diameter, therefore $PM=PM_{10}=PM_{2.5}$.
- Account for Startup Vents from Ammonia Plant #1 (108a, 108b, 108c), Ammonia Plant #3 (109a, 109b, 109c) and Ammonia Plant #4 (110a, 110b, 110c), total emissions of 7.3 tons per year of carbon monoxide and a Flare to control carbon monoxide and methane to 98% efficiency.
- Revise the CO emissions factor to 1.54 lbs/ton-100%-HNO_3 for Nitric Acid Plants #1 and #3 based on average test results from June 27, 2012, which results in increased emission limits.
- Add ammonia emissions from the Fumeabator Controls at Nitric Acid Plants #1 and #3
- Add ammonia emissions, methanol emissions, and VOC emissions for CO_2 Vents – Ammonia Plants #1, #3 and #4
- Correct $PM_{2.5}$ emissions rates for Ammonium Nitrate Plants #1 and #2, Granulator Scrubbers #1, #2, and #3, and Cooling Towers #1 and #2. This was done in the (M-2) permit.
- Add sulfur dioxide emissions for Boiler #1 when firing waste gas from the Natural Gas Desulfurization Units – Ammonia Plants #1 and #3 (Later clarified that Boiler #1 will burn only natural gas)
- Correct SO_2 emissions factor and emissions for Boilers #1 and #2 when firing natural gas
- Replace annual gasoline throughput limit for Gasoline Storage Tank with monthly throughput limit for consistency with NESHAP CCCCCC requirements and remove VOC annual limit
- Revise EUG 10 (Fugitives) to add Ammonia Storage Flare Pilot (EU ID 1002, later renumbered to EU ID 1001) as a point Source. This was done in Permit No. 2008-100-C (M-1) PSD as an insignificant source. Note that the final permit reclassifies the flare pilot as an insignificant activity.
- Revise EUG 10 (Fugitives) to add fugitive NH_3 emissions from piping components in ammonia service plant-wide. Ammonia fugitive emissions were updated in Permit No. 2008-100-C (M-1) PSD and are included as a source under EUG 10 in this permit.
- Remove the EPA Method 9 opacity monitoring and correlation required under the Good Combustion Practices condition for Primary Reformers - Ammonia Plants #1, #3, and #4, Boilers #1 and #2, Nitric Acid Preheaters #1, #3, and #4. DEQ deleted this part of the Good Combustion condition but added tune-ups and PEA testing.
- Remove limit of 208 hours/year on Purge Gas Vents – Ammonia Plants #1 and #3
- Combine individual ammonia production limits for Ammonia Plants #1 and #3 (110 tons/day each) into a bubbled limit of 220 tons/day. The ammonia from the two plants are commingled routed to the same storage tank and separating the two production streams

entails an allocation method that has shown to be inaccurate, resulting in more production from one plant than is physically possible.

- Bubble individual ton/year limits for each pollutant across all CO_2 vents

2008-100-TV (M-5) received December 18, 2013, submitted to upgrade Cooling Tower #2. The addition of two new vertical turbine pumps increased the throughput from 2,400,000 gallons per hour to 3,264,000 gallons per hour.

December 2, 2014: Amendment submitted to modify Permit No. the (M-1) and (M-2), as a result of meeting with DEQ, to revise compliance schedule for BACT study.

April 21, 2015, submitted as amendment to update Permit No. 2008-100-TV and all applications and amendments starting from Permit Application No. 2008-100-TV (M-3) submitted to date.

- Revise EUG 1 to add the Startup/Shutdown Vents at Ammonia Plants #1, #3, and #4 as point sources in the facility's air permit. Carbon monoxide is emitted from these vents. These sources are listed as Ammonia Plant #1 – Startup/Shutdown Vent (EU ID 108), Ammonia Plant #3 – Startup/Shutdown Vent (EU ID 109), and Ammonia Plant #4 – Startup/Shutdown Vents (EU IDs 110a and b)
- Revise emission rate tables for the Startup/Shutdown Vents to reflect accurate stack parameter information
- Revise compliance demonstration for the Startup/Shutdown Vents to require that compliance be demonstrated by recording venting hours and valve position to be used with the maximum hourly emissions to calculate ton/yr emissions
- Revise EUG 1 to add ammonia emissions resulting from the venting of un-scrubbed purge gas through the Ammonia Plant #4 – Primary Reformer stack after the reformer
- Delete Permit Condition 7.C.iii from the permit. This condition required daily opacity measurements and initial performance testing for natural gas combustion sources to correlate particulate matter limits to an opacity level. DEQ deleted this part of the Good Combustion condition but added tune-ups and PEA testing.
- Add two new vertical turbine pumps to Cooling Tower #2 (EU ID 902) to increase cooling at the Urea Plant. The increase in throughput requires the emission limits for particulate matter to be increased from 2.08 lb/hr and 9.09 ton/yr to 2.61 lb/hr and 11.45 ton/yr, respectively. Note that these numbers are changed later using a new calculation method. The explanation for this is included in the emissions and PSD evaluation.
- Revise Compliance demonstration for the Cooling Towers (EU IDs 901 and 902) to require that compliance be demonstrated by recording the aggregate operating hours of the pumps at each cooling tower to be used with the maximum hourly emission rates to calculate ton/yr emissions
- Revise compliance demonstration for the Purge Gas Vents (106a-c) to require that compliance be demonstrated by recording venting hours, production rate, and valve position to be used with the maximum hourly emission rates to calculate ton/yr emissions.
- Revise the maximum heat input capacity from 225 MMBtu/hr to 300 MMBtu/hr, and as a result, the permitted emission limits for the Ammonia Plant #4 Primary Reformer (EU ID 101)

- Revise the maximum heat input capacity from 22.08 MMBtu/hr to 40 MMBtu/hr, and as a result, the permitted emission limits for the Ammonia Converter Startup Heater (EU ID 107).
- Request that opacity be removed as the surrogate parameter for monitoring PM at the Granulator Scrubbers (EUG 7) and that monitoring frequency be reduced to monthly. PCC will conduct initial performance testing and will establish a surrogate or parametric monitoring performance indicator and associated value, correlated to the particulate matter emission rate that will ensure compliance with permitted limits. This surrogate or parametric indicator/value will be used to document continuous compliance with the permit limits. The CAM Plan is revised to reflect these changes
- Request that the hourly production limit compliance demonstration be removed for the Ammonium Nitrate Plants (EUG 6), as the emissions limits are based on the maximum capacity of the equipment
- Revise wording to state that Nitric Acid Plants #1 and #3 can be operated using synthesis gas or purge gas from the ammonia plants as the combustion fuel
- Revise the heating value of natural gas for all natural gas combustion units (EU IDs 101, 103, 105, 107, 401, 402, 403, 801, 802, 803, and 1002, later renumbered to 1001), and as a result, the permitted emissions limits
- Revise the emission calculations for the Condensate Steam Flash Drums (EU IDs 102 and 104) to be consistent with site specific compliance monitoring data
- Revise the Process Description section to:
    a. Change the maximum heat input capacity of the ammonia converter startup heater (EU ID 107) to 40 MMBtu/hr, and as a result, the permitted emissions limits
    b. State that scrubbed/un-scrubbed purge gas from Ammonia Plant #4 may be vented to the atmosphere after the reformer
    c. State that because the un-scrubbed purge gas from Ammonia Plant #4 has a higher ammonia concentration than scrubbed purge gas, its venting is included in the permit as additional emissions from EU ID 101.
    d. Change the “CAR” tank and vent listed under “EUG No. 2 – Urea Plant” to the “ART” [Ammonia Recovery Tank] tank and vent.
- Revise the Insignificant Activities Summary to:
    a. Add Ammonia Plants #1, #3, and #4 – Syn-Gas Startup/Shutdown Vents 108b, 109b, and 110c
    b. Add [] Portable Flare to support maintenance activities having the potential to release ammonia; e.g., work on ammonia related process equipment or the ammonia storage tanks.
    c. Add Maintenance Spray Painting as an Insignificant Activity pursuant to Appendix I of Title 252 Chapter 100
    d. Remove the statements that ART water is fed back into the process for reuse
    e. Revise the Ammonia Plant #4 Desulfurization Unit’s section to state that the “vented waste gas contains sulfur compounds, primarily tert-butyl mercaptan”

2008-100-C (M-6) PSD received April 21, 2015, submitted for the construction permit required by Permit Nos. 2008-100-C (M-1) PSD and 2008-100-C (M-2) PSD to incorporate the revised BACT limits for Ammonia Plant #4 Primary Reformer.

December 30, 2015 – revised BACT Analysis report and air dispersion modeling for Ammonia Plant #4 Primary Reformer to reflect the following changes:

- Updated ambient impact analysis for nitrous oxide (NO_X) emissions from the Ammonia Plant #4 Primary Reformer (EU ID 101) reflecting the proposed BACT limit revision for startup, shutdown, and malfunction (SSM) related scenarios;
- Updated ambient impact analysis for carbon monoxide (CO) emissions from the Ammonia Plant #4 Startup/Shutdown Vents (EU ID 110) and revise emissions to reflect flare control;
- Updated BACT analysis for the Ammonia Plant #4 Primary Reformer (EU ID 101) addressing the proposed NO_X BACT limit revision for startup, shutdown, malfunction, and malfunction related scenarios; and
- Updated BACT analysis for the Ammonia Plant #4 Startup/Shutdown Vents (EU ID 110) addressing the proposed CO BACT limit addition for this source.

May 17, 2016 – Amendment to Permit No. 2008-100-C (M-6) to

- Update air dispersion modeling for NO_X and CO to include Boiler #3.
- Confirm that Ammonia Plants #1 and #3 as well as Nitric Acid Plant #3 will remain out of service.
- Remove hours of operation for Boiler #3

2008-100-C (M-7) received July 6, 2016, submitted to incorporate requirements from an EPA Consent Decree and to make the following revisions.

- Change NO_X emissions limits for the nitric acid plants to comply with the EPA Consent Decree and add requirements for NSPS A and G.
- Additional requirements and statements as needed to incorporate the CD and incorporate Appendix C (CEMS Plan) of the CD.
- Remove CO limits for Nitric Acid Plants #1 and #3 as the change from NSCR to SCR will eliminate CO emissions resulting from the combustion of methane used in the NSCR (fumeabators).
- Revise ammonia limits for Nitric Acid Plants #1 and #3 to account for ammonia slip emissions resulting from the change from NSCR to SCR.
- Revise annual capacity of Nitric Acid Plant #1 from 73,000 TPY nitric acid to 87,600 TPY and the annual capacity of Nitric Acid Plant #4 from 127,750 TPY to 146,000 TPY and annual NO_X limits from 58.4 TPY to 26.3 TPY for Plant #1, 43.8 TPY to 19.7 TPY for Plant #3, and 159.7 TPY to 43.8 TPY for Plant #4.

January 24, 2017 – Notification dated January 18, 2017 that PCC that Ammonia Plant #1 and Ammonia Plant #3 were being sold and removed from facility.

April 19, 2017 – Revised BACT analysis for Ammonia Plant #4 Primary Reformer dated April 14, 2017 in response to NOD.

2008-100-TV (M-8) received April 28, 2017, submitted to make the following changes to the permit:

- Revise EUG 1 to update ammonia emissions at the Ammonia Plant #4 Reformer stack (EU ID 101) to address an additional ammonia stream.
- Revise EUG 1 to add the Urea Plant #2 Ammonia Recovery Tank, EU ID 111, ammonia emissions (previously an Insignificant Activity) as a point source.
- Remove all sources associated with Ammonia Plant #1 and Ammonia Plant #3 from the permit. These sources include the Ammonia Plant #1 Primary Reformer, Desulfurization Unit, Carbon Dioxide Regenerator, and Waste Heat Boiler – Auxiliary Heater (EU ID 103), Ammonia Plants #1 and #3 – Condensate Steam Flash Drum (EU ID 104), Ammonia Plant #3 Primary Reformer, Desulfurization Unit, Carbon Dioxide Regenerator, Waste Heat Boiler – Auxiliary Heater – East, and Waste Heat Boiler – Auxiliary Heater – West (EU ID 105), Ammonia Plants #1 and #3 – Purge Gas Vents (EU IDs 106a, b, & c), Ammonia Plant #1 – Startup/Shutdown Vent (EU ID 108), Ammonia Plant #3 Startup/Shutdown Vent (EU ID 109), and CO_2 Vent – Ammonia Plant #3 (EU ID 502).
- Revise emission rate tables for EU IDs 101, 102, 301, 302, 303, 303a, 501a, 501b, and 602 to reflect accurate emissions rates.
- Rename CO_2 Plant – Pressure Control Vent (EU ID 501c).
- Revise EUG 5 – Carbon Dioxide Vents to remove Ammonia Plant #1 and #3 emissions.
- Revise EUG 1 to update the emission calculations at the Ammonia Plant #4 Reformer Stack (EU ID 101) and at the Ammonia Plant#4 Condensate Steam Flash Drum (EU ID 102).

2008-100-TV (M-9) received September 7, 2017, to amend June 30, 2016 application that was submitted to incorporate the EPA Consent Decree to make the following changes:

- Remove all sources associated with Nitric Acid Plant #3 from the permit. These sources include Nitric Acid Plant #3 (EU ID 302) and the Nitric Acid Preheater #3 (EU ID 402).
- Revise EUG 3 to update the maximum design flow rate at Nitric Acid Plant #1 (EU ID 301) to 20,643.2 scfm, and at Nitric Acid Plant #4 (EU ID 303) to 33,626.5 scfm. These revisions are necessary, so that the maximum rates are consistent with design information supporting the Consent Decree related equipment changes. Also, revise the maximum flow rate for Startup/Shutdown/Malfunction at Nitric Acid Plant #1 (EU ID 301) to 15,907.7 scfm, and at Nitric Acid Plant #4 (EU ID 303) to 23,692.4 scfm. These changes are necessary based on an internal engineering review of SSM scenarios, which identified different maximum rates during these types of events.
- Replace the existing fumeabator at Nitric Acid Plant #1 (EU ID 301) with a new non-selective catalytic reduction (NSCR) unit, followed by a new selective catalytic reduction (SCR) unit.
- Add natural gas emissions associated with the NSCR to Nitric Acid Plant #1 (EU ID 301).
- Revise EUG 3 to update ammonia slip limits at Nitric Acid Plant #1 (EU ID 301) and Nitric Acid Plant #4 (EU ID 303).

Amendment received September 15, 2017. PCC states this amendment was originally submitted on July 6, 2016 to amend previous applications including the following changes:

- Revise ammonia emission limits for Ammonia Plant #4 – Primary Reformer to address ammonia releases during different operating scenarios.
- Revise ammonia emission limits for Nitric Acid Plant #1 and Nitric Acid Plant #3 resulting from NSCR unit (fumeabator) operations.
- Revise EUG 3 to add the Nitric Acid Plant #4 Startup Vent (EU ID 303a) as a point source in the facility's air permit, with associated emission of NO_X and NH_3.
- Revise emission rates for Cooling Towers #1 and #2 based on updated facility sampling results for Total Dissolved Solids.

Amendment received by e-mail November 2, 2017, edits included with PCC's review of the ODEQ's pre-draft memorandum and permit. PCC states this amendment was necessary to make revisions/corrections to the pre-draft Memorandum and Permit No. 2008-100-C (M-6) PSD in addition to previously submitted applications/amendments. The proposed revisions/corrections include the following:

- Add the following sources and associated emission limits and specific conditions to the permit for EUG 10, including source numbering changes, as indicated. Also, remove any references to EUG 10 itself being "fugitive":
  - EU ID 1001 Ammonia Storage Flare Pilot
  - EU ID 1002 Gasoline Storage Tank
  - EU ID 1003 Ammonia Fugitives
- Add limits for the Ammonia Storage Flare Pilot (EU ID 1001) for NO_X and CO emissions during flaring events. Note that the final permit reclassifies the flare pilot as an insignificant activity.
- Revise, from previous application requests, the compliance demonstration requirements for the Ammonia Plant #4 – Startup/Shutdown Vent (EU ID 110) from "*Compliance shall be demonstrated by recording venting hours and valve position to be used with the maximum hourly emissions to calculate ton/yr emissions*" to "*Compliance shall be demonstrated by recording venting hours and maximum hourly emissions to calculate ton/yr emissions. For compliance demonstration purpose, PCC will assume that the valve is in the 100% open position at all times*".
- Revise all emission limits to reflect the ODEQ's rounding conventions for criteria pollutants and HAPs.
- Revise the Ammonia Plant #4 Condensate Steam Flash Drum (EU ID 102) Methanol limit. Because Ammonia Plants #1 and #3 have been removed, the potential to emit is no longer greater than 10.0 TPY. Therefore, the bubble limit of 9.5 TPY is no longer necessary to avoid major source status for HAPs. The PTE for Ammonia Plant #4 alone is 8.01 TPY.
- Revise the CO emission calculations for the uncontrolled Ammonia Plant #4 Startup/Shutdown Vents (EU IDs 110a and 110b) and the controlled Ammonia Plant #4 Startup/Shutdown Vent Flare (EU ID 110) to account for unplanned startup/shutdown scenarios. Add related CO emission limits for unplanned startups and shutdowns to the draft permit. These emissions are emitted as controlled emissions through the Ammonia Plant #4 Startup/Shutdown Flare (EU ID 110). Remove all references to "Malfunction" and have the two categories, "Planned Startups/Shutdowns" and "Unplanned Startups/Shutdowns". This issue was addressed in a recent conference call between

representatives for PCC and ODEQ on August 16, 2018. As a result, all references to Unplanned Startups/Shutdowns and associated limits have been removed.

- Revise the compliance demonstration requirements for the Urea Plant #2 Ammonia Recovery Tank (EU ID 111) ammonia emissions and monitor weekly.
- Remove Nitric Acid Plant #4 Startup Vent (EU ID 303a) from the permit. Due to Consent Decree related equipment modifications, this vent has been piped to the SCR at Nitric Acid Plant #4.
- Revise the CO emission calculations and the resultant emission limit for Nitric Acid Plant #1 (EU ID 301), from 4.0 lbs/hr and 14.6 TPY in Permit No. 2008-100-C (M-2) to 15.4 lbs/hr and 67.5 TPY to be consistent with 2012 testing. The reason for this is that PCC is proposing to replace the NSCR, which is the current source of CO, with a new catalytic burner and an SCR and there is uncertainty as to how this will affect CO emissions. The emissions rates of 15.4 lbs/hr and 56.2 tons per year were first stated in the May 22, 2013 (received May 28) submittal based on a production rate of 73,000 tons per year of nitric acid. The revised maximum production rate of 87,600 tons per year was first noted in the June 30, 2016 (received July 6) application, calculations section, Appendix C, for NO_X emissions. This request updates the annual CO emissions to 67.5 tons per year based on the stated revised annual capacity of 87,600 tons.
- Revise the compliance demonstration requirements for the Carbon Dioxide Vents (EU IDs 501a, 501b, and 501c.) For compliance demonstration purposes, emissions from EU IDs 501b and 501c will be accounted for in the calculation of emissions at EU ID 501a
- Revise the emission calculations for the Gasoline Storage Tank (EU ID 1002) to be consistent with the previously requested, revised throughput limit of 10,000 gal/month.
- Revise the Insignificant Activities List to change “Maintenance Spray Painting” to “Maintenance Painting” to cover all types of painting operations.
- Revise the Insignificant Activities List to add Maintenance Parts Washing.
- Revise Monitoring Condition 7.B to add a condition to clarify the short-term monitoring/record keeping requirements for permit limits based on maximum capacity.
- Correct several installation dates for equipment as well as show “pending status” for equipment not yet installed, Ammonia Plant #4 Startup/Shutdown Vent Flare and Boiler No. 3. PCC submitted during the Public Comment period that Boiler No. 3 has been installed and is operational. All “pending status” for Boiler No. 3 has been updated to show that it has been installed.
- Clarification that Application No. 2008-100-TV (M-8) received April 28, 2017, is requesting an enforceable limit of 8.4 TPY-VOC from the Condensate Steam Flash Drum at Ammonia Plant #4.
- Correct the annual production capacity of Ammonium Nitrate Plant #1 and Plant #2 Neutralizers from 208,488 tons to 208,050 tons to be consistent with previous utilization rate used in emissions calculations and a maximum daily production rate of 570 tons/day.

January 18, 2018: Amendment submitted to amend Permit No. 2008-100-TV (M-9) to revise emissions exhaust flow rates and emissions at EUG 3 Nitric Acid Plants. PCC states that they need these revisions to comply with the EPA consent Decree. The proposed revisions/corrections include the following:

- Revise EUG 3 to update the maximum design flow rate and the SSM flow rate and Nitric Acid Plant #1 (EU ID 301) and Nitric Acid Plant #4 (EU ID 303) based on post-consent decree design (Maximum design flow rate for Nitric Acid Plant #1 from 20,643.2 scfm to 20,330 scfm and Nitric Acid Plant #4 from 33,626.5 to 27,488scfm. SSM flow rate at Nitric Acid Plant #1 from 15,907.7 scfm to 15,667 scfm and Nitric Acid Plant #4 (EU ID 303) from 23,692.4 scfm to 23,333 scfm). There were no changes to permit limits.
- Revise EUG 3 to update ammonia slip limits at Nitric Acid Plant #1 (EU ID 301) and Nitric Acid Plant #4 (EU ID 303) , keeping the dual short term limits for ammonia slip during standard operating conditions and during SSM conditions and one combined annual limit.

Previous Requested Limits

Emissions Point	NH_3 Slip Emissions	
	Maximum (lb/hr)	Annual ton/yr
Nitric Acid Plant #1	5.5 Normal Operations	29.5
	42.2 SSM	
Nitric Acid Plant #4	9.0 Normal Operations	59.3
	62.9 SSM Related	

New Requested Limits

Emissions Point	NH_3 Slip Emissions	
	Maximum (lb/hr)	Annual ton/yr
Nitric Acid Plant #1	5.4 Normal Operations	29.1
	41.6 SSM	
Nitric Acid Plant #4	7.3 Normal Operations	52.5
	61.9 SSM Related	

- Revise the CO emissions rate and the resultant emissions limit for Nitric Acid Plant #1 (EU ID 301) from 15.4 lbs/hr and 67.5 TPY to 22.0 lbs/hr and 96.4 TPY based on 2018 stack testing. Stack testing had not previously been performed on the new catalytic burner and the previously requested rate was estimated from test 2012 data on the old control system.
- Revise emission rate tables for EUG 3 to reflect accurate stack parameter information.
- Include ambient air impact analysis for NH_3 and H_2S.

Amendment received by e-mail September 11, 2018, edits included with PCC's review of the ODEQ's pre-draft memorandum and permit. This amendment was necessary to make revisions/corrections to the pre-draft Memorandum and Permit No. 2008-100-C (M-6) PSD in addition to previously submitted applications/amendments to account for comments made within the DEQ peer review process. The proposed revisions/corrections include the following:

- Revise the document to reflect that unplanned startups/shutdowns and SSM are not being permitted.
- Add explanation as to how the desulfurization process works, i.e. to clarify that back flushing is done with natural gas and the resulting waste fuel burned, not back flushed with steam and vented to the atmosphere.

- Added explanation of the alternate scenarios, of which six (6) were identified that include various combinations of operational/non-operational/bypass status of process equipment ancillary to the Ammonia Plant #4 Primary Reformer that can affect the ammonia content of emissions.
- Revise memorandum and permit consistent with discussion between PCC and DEQ during a conference call on August 21, 2018 to remove permit limits for unplanned startups/shutdowns and malfunctions. This also includes removing limits for the Ammonia Storage Flare.
- Revise the method of calculating particulate matter emissions from the cooling towers to account for speciation of $PM_{2.5}$, instead of assuming equal to PM_{10}, using a method published by the New Mexico Environment Department – Air Quality Bureau. This method alleviates the appearance of a significant increase in emissions when projects are aggregated. To make the PSD analysis consistent, this correction involves going back to the (M-2) permit.
- Make minor changes in response to DEQ permit writer David Pollard's request in his email dated September 4, 2018.

Amendment received by e-mail October 15, 2018, included request to revise Specific Condition No. 1.D.ii to allow PCC eighteen (18) months from permit issuance to have the Ammonia Plant #4 Startup/Shutdown Vent Flare installed and operational.

On April 4, 2019, PCC submitted during the public comment period, the following list of revisions. These revisions are also addressed in "SECTION X, RESPONSES TO COMMENTS".

SECTION II. EQUIPMENT

The facility consists of a complex network of process vessels, dryers, and piping. The following table categorizes the processes at the facility by emission unit group (EUG) and emission point identification.

EMISSION UNITS			
EUG ID	**EU ID**	**EU Name/Model**	**Construction Date**
EUG 1		**Ammonia Plant**	
	101	Ammonia Plant #4 Primary Reformer - 300 MMBtu/hr	1995
	102	Ammonia Plant #4 Condensate Steam Flash Drum	1995
	107	Ammonia Plant #4 – 40 MMBtu/hr Ammonia Converter Startup Heater	2012
	110a	Ammonia Plant #4 Startup/Shutdown Vent	1995
	110b	Ammonia Plant #4 Startup/Shutdown Vent	1995
	110	Ammonia Plant #4 - Planned/Startup/Shutdown Vent Flare	Pending 2019
	111	Urea Plant #2 Ammonia Recovery Tank	1965
EUG 2		**Urea Plants**	
	201	Urea Plant #1	1995

EMISSION UNITS			
EUG ID	**EU ID**	**EU Name/Model**	**Construction Date**
	202	Urea Plant #2	1995 [1]
EUG 3		**Nitric Acid Plants**	
	301	Nitric Acid Plant #1 - NSCR Burner/SCR	December 2017
	303	Nitric Acid Plant #4 - SCR Unit	2008 [2]
EUG 4		**Nitric Acid Plants Preheaters**	
	401	Nitric Acid Preheater #1 - 20 MMBtu/hr	1966
	403	Nitric Acid Preheater #4 - 20 MMBtu/hr	1995
EUG 5		**Carbon Dioxide Vents**	
	501a	Ammonia Plant #4 – CO_2 Tower Vent	1966
	501b	Carbon Dioxide Plant – CO_2 Vent	1965
	501c	CO_2 Plant – Pressure Control Vent	1965
EUG 6		**Ammonium Nitrate Plants**	
	601	Ammonium Nitrate Plant #1 Neutralizer Vent	1966
	602	Ammonium Nitrate Plant #2 Neutralizer Vent	1995
EUG 7		**Granulator Scrubbers**	
	701	Granulator Scrubber #1	1975
	702	Granulator Scrubber #2	1975
	703	Granulator Scrubber #3	1975
EUG 8		**Boilers**	
	801	53 MMBtu/hr Boiler #1	1978
	802	80 MMbtu/hr Boiler #2	1995
	803	100 MMBtu/hr Boiler #3	2018
EUG 9		**Cooling Towers**	
	901	Cooling Tower #1	1966
	902	Cooling Tower #2	1995/2013
EUG 10		Miscellaneous	
	1002	1,000-gallon Gasoline Storage Tank	1965
	1003	Ammonia Fugitives	

1 Urea Plant #2 was originally constructed in California in 1965 and relocated to the Pryor Plant Chemical Company in 1995.

2 Nitric Acid Plant #4 was originally constructed in Illinois in 1964 and relocated to the Pryor Plant Chemical Company in 1995. The SCR was new construction added during 2008-2009.

SECTION III. PROCESS DESCRIPTION

PCC is an integrated inorganic fertilizer plant located at the Mid-America Industrial District in Pryor, Oklahoma. The facility consists of several production plants as described below.

EUG No. 1 - Ammonia Plant #4

Ammonia Plant #4 has a maximum operating capacity rate of 770 tons of ammonia per day, or 281,050 tons per year. The plant is equipped with a gas-fired primary reformer with a maximum heat input capacity of 300 MMBtu/hr. The reformer is fired on a combination of pipeline quality natural gas, waste gas generated from the Natural Gas Desulfurization Unit, and process offgas (e.g., purge gas) from Ammonia Plant #4. Ammonia Plant #4 also utilizes a natural gas-fired startup heater related to the operation of the ammonia converter. The maximum heat input capacity of the ammonia converter startup heater is 40 MMBtu/hr

During normal operation, the purge gas at Ammonia Plant #4 is scrubbed to reduce the ammonia content prior to its introduction to the primary reformer as fuel. However, at times scrubbed or un-scrubbed purge gas may be vented to atmosphere downstream of the reformer via piping from the fuel side of the reformer to the reformer stack. In addition, an ammonia-containing gas stream from the Urea Plant #2 Head Tank may be vented to atmosphere downstream of the reformer. These vented gas streams are included in the permit as additional emissions from EU ID 101.

The plant produces ammonia by reacting hydrogen with nitrogen over a catalyst at high temperature and pressure to form ammonia (NH_3). Nitrogen is obtained from ambient air, while hydrogen is obtained from the catalytic steam reforming of methane. The process uses about 21,250 standard cubic feet of natural gas per ton of ammonia produced. There are six steps required to produce ammonia using the catalytic steam reforming method:

- Natural gas desulfurization
- Catalytic steam reforming
- Carbon monoxide shift
- Carbon dioxide removal
- Methanation
- Ammonia synthesis ($3H_2 + N_2 \dashrightarrow 2NH_3$)

PCC had planned to operate two additional ammonia plants (Ammonia Plants #1 and #3) but took them out of service when amended modeling proved that reductions in NO_X emissions had to be accomplished to meet the NAAQS (National Ambient Air Quality Standards). The two plants have been sold and removed from the facility.

Ammonia plant purge gas, produced as an off-gas from the ammonia production process, is a good fuel source rich in hydrogen. PCC originally used purge gas to supplement the primary fuel input (i.e., natural gas) to the primary reformer burners at Ammonia Plant #4 and to the fumeabator at Nitric Acid Plant #1 in lieu of purchasing natural gas. Later (i.e., since 2013), PCC replaced the use of purge gas as a supplemental fuel at the fumeabator with ammonia plant synthesis gas (syngas). Purge gas is still used in the Ammonia Plant #4 Primary Reformer and is scrubbed prior to its introduction into the reformer to reduce the ammonia content. At times, the scrubbed purge gas is vented instead of burning it in the reformer. This is because a weak AN solution is produced in the scrubbing process that cannot be totally reintroduced to the process at the nitric acid plants because of the large volume. This weak AN solution then has to be handled as a waste product, creating other environmental concerns. Additionally, the facility cannot maintain the needed gas pressure over the transfer distance from the Ammonia Plant #4 scrubber to the fumeabator, but the pressure can be maintained when transferred directly from the ammonia plant process step to the reformer. The aforementioned venting episodes at the reformer, as described, are designated as an insignificant activity in the permit. Based on test data from the Ammonia Plant #4 Primary Reformer, less NO_X is generated when using scrubbed purge gas as fuel rather than natural gas. According to the applicant, a purge gas analysis off the flow outlet of the scrubber on July 6, 2017 yielded: hydrogen - 62.1%, nitrogen - 20.5%, and methane - 14.4%. Water content is considered to be less than 100ppm.

By application dated April 28, 2017, ammonia emissions were increased to account for potential venting of waste gas from the Urea Plant #2 Head Tank. The ammonia vented from the #2 Head Tank will be vented with other vented waste gas streams at Ammonia Plant #4 Primary Reformer stack (EU ID 101).

Natural Gas Desulfurization

Sulfur is a poison to many catalysts used in the ammonia synthesis process. In this step of the ammonia synthesis process, the sulfur contained in the natural gas feedstock is removed with activated carbon. The activated carbon adsorbs the sulfur contained in the pipeline natural gas that is used to make synthesis gas. Then, about every 8 to 12 hours, the carbon canisters are back flushed with hot natural gas to remove the sulfur, such that they can be used again to remove the sulfur from the natural gas feed as process operations continue. The desulfurization process off-gas (the sulfur containing natural gas flushed from the carbon canisters) is then routed to the Ammonia Plant #4 Primary Reformer furnace as fuel. This cycle continues on a continuous basis while the ammonia plant is in operation.

Catalytic Steam Reforming

After desulfurization, the natural gas feed is mixed with the steam and the mixture is sent to the primary reformer. This process utilizes indirect heating fired on a combination of pipeline quality natural gas, waste gas generated from the Natural Gas Desulfurization Unit, and process offgas (e.g., purge gas). In the reforming process, approximately 56% of the methane contained in the natural gas feed is converted to hydrogen and carbon dioxide. The resulting gas mixture is then sent to a secondary reformer, where it is mixed with compressed air to form a final “synthesis gas” that has the desired hydrogen to nitrogen molar ratio. This is an exothermic reaction that does not need an external source of heat. An electrical powered auxiliary chiller and cooling coils may be utilized during warmer weather to cool the inlet air to the air compressor to approximate cooler weather operating conditions, thereby ensuring that higher air density is maintained. The synthesis gas leaving the reformer is cooled, and the heat recovered, in the Feed Gas Preheater.

Carbon Monoxide Shift

Carbon monoxide is formed as a byproduct in the catalytic steam reforming process. After cooling, the carbon monoxide and water contained in the synthesis gas are converted to carbon dioxide and hydrogen in the High Temperature Shift Converter. Un-reacted steam is condensed and separated from the synthesis gas in a knockout drum. Condensate from the Ammonia Plant #4 knockout drum is flashed in the Ammonia Plant #4 Condensate Steam Flash Drum (EU ID 102) at a rate of approximately 1,050 lbs/hr steam to remove volatile gases. The residual condensate is returned to the boiler or may be temporarily held in the de-aerator until ready for use as feed water to the boiler.

Carbon Dioxide Removal

After the carbon monoxide shift, carbon dioxide is removed from the synthesis gas by sending it through an absorption tower. There, carbon dioxide is stripped out of the gas using methyl diethanolamine (MDEA). Carbon dioxide (CO_2) is removed from the MDEA in a stripper column, where it is then routed as needed to the Carbon Dioxide Plant and/or the Urea Plants, and excess amounts are vented. At the Carbon Dioxide Plant, the CO_2 is filtered, compressed, and sold for food and beverage use. The CO_2 is sent to the urea plants as a primary feedstock along with ammonia to manufacture urea. The transfer of CO_2 to the carbon dioxide and/or urea plants directly reduces the total amount of CO_2 that would otherwise have been emitted to the atmosphere.

There are two towers included at the Carbon Dioxide Removal step of the process description. The first is an absorption column, wherein synthesis gas coming from the Carbon Monoxide Shift step of the ammonia process is introduced at the bottom and flows upward through trays injected with “lean” methyl diethanolamine (MDEA). The MDEA absorbs the CO_2, and the synthesis gas passes on to the Methanation step of the ammonia plant process. The “rich” MDEA (amine liquid saturated with CO_2) is then sent to the second column, the regenerator, where hot gases are applied, stripping out the CO_2. It is this CO_2, leaving the regenerator, that is sent to the CO_2 Plant and/or the Urea Plants. The two columns (the absorber and the regenerator) and associated pumps, piping, etc. is by technical definition an “amine unit”, with MDEA being the chemical amine used as the absorption agent.

Methanation

The synthesis gas leaving the carbon dioxide absorber consists primarily of uncombined hydrogen and nitrogen, with residual amounts of carbon dioxide and carbon monoxide. Carbon dioxide and carbon monoxide are poisons to ammonia synthesis catalysts and must be removed. This is accomplished by passing the heated process gas over a catalyst, where the carbon dioxide and carbon monoxide are converted to methane.

Ammonia Synthesis

In this final step, the hydrogen and nitrogen-rich synthesis gas is converted to ammonia using a two stage process. In the first stage, synthesis gas from the methanation process is compressed, mixed with recycled synthesis gas, and then cooled. Any ammonia in the synthesis gas, which has condensed at this point in the process, is separated from the unconverted synthesis gas and sent to a separator to remove impurities. In the second stage, unconverted synthesis gas is compressed, preheated, and then contacted with an iron oxide catalyst in the synthesis converter. Ammonia in the gas leaving the converter is condensed, and the ammonia is sent to the separator. Ammonia sent to the separator is flashed to remove impurities. The impurities include Argon, water, and unreacted nitrogen, hydrogen, and methane. Trace amounts of separated water ultimately end up in a storage tank. Flashed N_2, H_2, and CH_4 that is not removed in the Hydrogen Recovery Unit (HRU) or AN Solutions Plant scrubber are sent to the Reformer as fuel along with non-condensables (e.g., Ar). The ammonia rich flashed vapor is condensed in a chiller, where anhydrous ammonia is removed and stored as a liquid at low temperature. The process is not 100% efficient, and some of the unconverted synthesis gas leaving this step in the process is mixed with incoming raw synthesis gas and recycled back through the process.

EUG No. 2 - Urea Plants

Pryor currently operates one urea production plant (i.e., Urea Plant #2), with a maximum production capacity of 480 tons of urea per day, or 175,200 tons per year. Pryor will operate one additional urea production plant, Urea Plant #1, with a maximum production capacity of 80 tons of urea per day. Urea ($CO(NH_2)_2$) is produced by combining ammonia (NH_3) with carbon dioxide (CO_2). The ammonia and carbon dioxide used in this process are produced on-site.

In the first step in the urea manufacturing process, ammonia and carbon dioxide are combined to form ammonium carbamate ($NH_2CO_2NH_4$). The ammonium carbamate is then partially dehydrated to form an aqueous urea solution. All of the urea produced by the facility at Urea Plants #1 and #2 is mixed with ammonium nitrate in the Urea-Ammonium Nitrate Solution Plant to form urea-ammonium nitrate (UAN) solution. The UAN solution is stored on-site temporarily prior to being shipped off-site with no emissions released to the atmosphere. No urea granulation occurs at this facility.

Process off-gases from Urea Plant #2 are vented below the liquid surface in the Urea Plant #2 Ammonia Recovery Tank, resulting in NH_3 emissions from the tank vent. By application dated April 18, 2017, PCC requests to remove this source from the Insignificant Activities list and assign limits of 36.5 lbs/hr and 49.8 TPY. In the same application, PCC also plans to vent ammonia containing waste gas through the Ammonia Plant #4 Primary Reformer stack (EU ID 101) and requests limits of 520.5 lbs/hr and 265.2 TPY. The ammonia emission rate from EU 101 depends on the combination of unit operations in service and the production rate. The equipment affecting the level of ammonia emissions from EU ID 101 include the flash gas and purge gas scrubbers in the HRU, the purge gas scrubber in the AN Solutions Plant #2, and the Ammonia Plant #4 Primary Reformer, which is designed to combust scrubbed purge gas as a fuel substitute for natural gas. Normally, all of the aforementioned units are in operation. Depending on operational requirements, however, one or more of these units may be out of service for a period of time while Ammonia Plant #4 continues to operate.

Urea Plant #1 is a totally closed loop process, i.e., no process off-gases from this plant are vented.

EUG No. 3 - Nitric Acid Plants

Pryor operates two nitric acid plants at the facility. Nitric Acid Plant #1 produces a maximum of 240 tons of 100% nitric acid per day, or 87,600 tons per year and Nitric Acid Plant #4 produces a maximum of 400 tons of 100% nitric acid per day, or 146,000 tons per year. Nitric Acid Plant #3 was previously permitted to produce a maximum of 180 tons of 100% nitric acid per day, or 54,750 tons per year but was taken out of service when amended modeling demonstrated that reductions in NO_X emissions had to be accomplished to meet the NAAQS (National Ambient Air Quality Standards). Nitric Acid Plant #3 will no longer be in operation and will be removed from the facility. Nitric acid (HNO_3) is produced in three steps:

- Ammonia oxidation
- Condensation
- Absorption

Ammonia Oxidation

In this process, ammonia is first mixed with ambient air, heated, and passed over a cobalt catalyst, where the ammonia is oxidized to nitric oxide.

Condensation

The nitric oxide rich gas stream is first cooled in a waste heat recovery boiler and then further cooled in a cooler/condenser. Under these conditions, nitric oxide formed during the ammonia oxidation step is further oxidized to nitrogen dioxide and nitrogen tetroxide.

Absorption

The nitrogen dioxide and nitrogen tetroxide mixture from the condensation step is sent to the bottom of an absorption tower, where it flows countercurrent to water introduced at the top of the tower. Nitric acid is formed by contact of the nitrogen dioxide and tetroxide with a water scrubber and is removed at the bottom of the absorption tower.

To meet Consent Decree requirements, the existing fumeabator at Nitric Acid Plant #1 was replaced by a non-selective catalytic burner followed by a SCR unit. The catalytic burner also serves as a preheater to the SCR unit. The catalytic burner may be fired on natural gas or syngas from Ammonia Plant #4. Note that although both gases can be used as a supplemental fuel, syngas is not the same as purge gas. Syngas is an intermediate process gas that is further processed to make ammonia, and purge is a waste gas from the ammonia manufacturing process. The process gas exiting the top of the absorption tower at Nitric Acid Plant #1 passes through the non-selective catalytic burner, followed by the SCR unit for NO_X control.

The NO_X containing process gas exiting the top of the absorption tower at Nitric Acid Plant #4 is sent to a SCR unit for control.

EUG No. 4 - Nitric Acid Plants Preheaters

The Nitric Acid Plants Preheaters are used to preheat the process air from 300 ^oF to 500 ^oF for startup purposes. The process air flows through tubes inside the preheater, which are heated by a natural gas fired burner. The preheaters are used for startup purposes only. As implied by the EUG name, these emissions units have only combustion related emissions.

EUG No. 5 – Carbon Dioxide Vents

Excess carbon dioxide from the processes may be vented to the atmosphere. Refer to sections describing the Carbon Monoxide Shift, Carbon Dioxide Removal, and Carbon Dioxide Regenerator processes and also emissions calculations for EUG No. 5. The waste CO_2 contains trace amounts of carbon monoxide.

EUG No. 6 - Ammonium Nitrate Plants

Pryor operates two ammonium nitrate plants at the facility. The ammonium nitrate plants have a maximum total combined production capacity of 1,140 tons of ammonium nitrate per day (570 tons per day or 208,050 tons per year each). Ammonium nitrate (NH_4NO_3) is produced by the neutralization of nitric acid with ammonia. Both the ammonia and the nitric acid are produced on-site. The resulting aqueous ammonium nitrate solution is either concentrated by evaporation and sent to the granulator to be processed into granules, or mixed with urea to form urea ammonium nitrate solution.

Ammonium nitrate granules are produced at the pan granulator by spraying concentrated ammonium nitrate solution onto a heated, rotating circular pan. Layers of ammonium nitrate are added to the pan as the water evaporates, eventually forming granules. The granules are then cooled, screened to obtain consistent granule sizes, and then stored temporarily prior to being shipped off-site.

Ammonium Nitrate Plant #1 and Ammonium Nitrate Plant #2

Ammonia vapors and 56% Nitric Acid liquid are mixed in a neutralizer (tank) at atmospheric pressure. This process is exothermic, and therefore makes steam at atmospheric pressure due to boiling the water out of the nitric acid. As the level in the neutralizer comes up, it reaches an overflow line that sends the 83% ammonium nitrate solution to the rundown tank still at atmospheric pressure. At this point, the ammonium nitrate solution is approximately 280 °F. Steam that is produced in the neutralizer and the rundown tank is utilized to heat the nitric acid and vaporize ammonia. Steam that is not condensed as a result of this heat transfer is subsequently condensed in a water cooled condenser.

EUG No. 7 - Granulator Scrubbers

Granulated ammonium nitrate (AN) can be produced using the Pan Granulator or the Prill Tower. Ammonium nitrate granules are produced at the Pan Granulator by spraying concentrated ammonium nitrate solution onto a heated, rotating circular pan. Layers of ammonium nitrate are added to the pan as the water evaporates, eventually forming granules. The granules are then cooled, screened to obtain consistent granule sizes. Prilled ammonium nitrate can be produced at the Prill Tower. Concentrated ammonium nitrate solution is broken into droplets by the prill plate at the top of the tower. The AN droplets then fall countercurrent to cooling air forming prills. These products are stored temporarily prior to being shipped offsite.

There are three separate scrubbers serving the Granulator Plant and the Prill Tower. They perform the same function of scrubbing ammonium nitrate particulate from separate air flows on three different portions of the Granulator Plant. When the Pan Granulator is running, all three of the scrubbers are in service. When the Prill Tower is running, Granulator Scrubber #1 is the only one in service. The liquid sumps of the three scrubbers each contain a weak ammonium nitrate solution and are connected to make one single liquid circulation. Granulator Scrubber #1 receives condensate from the ammonia nitrate condensate tank, and the liquid concentrates up to a maximum of 3% as a result of control of ammonium nitrate particulate. The scrubber liquid then gravity feeds to Granulator Scrubber #2, where it concentrates up to a maximum of 17%. The liquid is then pumped to Granulator Scrubber #3, where it concentrates up to a maximum of 60%. Finally, the scrubber liquid is pumped back into the ammonium nitrate product solution and reused. Following are additional details concerning each scrubber.

Granulator Scrubber #1: A cyclone blower pulls air across a set of chiller coils and through the product cooler counter current to the flow of ammonium nitrate granules flowing through the cooler. This process cools the nitrate down by a temperature difference of approximately 70 degrees Fahrenheit (^{o}F) from the inlet of the cooler to the exit of the cooler. A small amount of ammonium nitrate particulate is pulled out of the cooler and into the top of the cyclones, where it is forced to the outside of the cyclones by centrifugal force created by the cyclonic action of the forced air. The particles are washed down into the sump (wet system tank) by two nozzles spraying a weak ammonium nitrate solution (1% - 3%) through the cyclones. The air exits the system via the blower discharge stack. The weak ammonium nitrate solution level in the Granulator Scrubber #1 sump runs into an overflow line that feeds Granulator Scrubber #2 Scrubber to maintain the working level in it. The concentration of the ammonium nitrate solution in Granulator Scrubber #1 is controlled by how much condensate is added from the condensate tank in the Ammonium Nitrate Solution Plant, and as noted, is maintained at approximately 1% to 3%. The two nozzles at the top of the cyclone are checked once per shift and are changed out if necessary. The wet system tank is washed out approximately once per month during shutdown for maintenance repairs.

Granulator Scrubber #2 (the Grey Scrubber), on the Pan Granulator only, pulls emissions from two discharges. The scrubber pulls steam and small ammonium nitrate particles off the top of the evaporator and ammonium nitrate dust out of the pan disc. These two streams combine to flow past four nozzles spraying ammonium nitrate solution (13% - 17%) supplied by a recycle pump. The combined stream flows through a venture scrubber, where the liquid ammonium nitrate solution is separated from the gas. The particle-laden liquid collects in the sump (collection tank), and the gas is discharged to the atmosphere. The sump liquid level is automatically controlled to pump excess liquid to Granulator Scrubber #3. The concentration of the liquid in Granulator Scrubber #2 is determined by how much liquid it receives from Granulator Scrubber #1, but the concentration is usually 13% to 17% (with occasional variances outside that range). This system requires very little maintenance; however, the man-way is opened annually, and the inside of the scrubber is inspected. Past maintenance required that the nozzles be replaced one to two times per year. The collection tank is washed out about once per month when the unit is shut down for maintenance repairs.

Granulator Scrubber #3: A blower pulls air across a set of chiller coils and through the pre-cooler countercurrent to the flow of ammonium nitrate granules also flowing through the pre-cooler. This cools the ammonium nitrate by a temperature drop of approximately 50 ^{o}F from the inlet of the cooler to the exit of the cooler. Ammonium nitrate fines and dust are pulled out of the pre-cooler and into the north vessel of the scrubber, where the emissions-laden air comes into contact with the ammonium nitrate solution (having approximately 60% by concentration) that is being sprayed through four nozzles. The air flows from the north vessel of the scrubber to the south vessel and through four sets of hog hair filters that are sprayed with ammonium nitrate solution to keep the recovered fines washed to the scrubber sump. The concentration of the solution is held at 58% to 60%. At 65% concentration, the solution has a tendency to precipitate out on the filters, thereby plugging them and causing damage. The discharge air then passes through a set of baffles and then through a demister pad designed to remove entrained liquid and mist before it is discharged to the atmosphere. The level of the scrubber sump is monitored manually through a sight glass, and excess liquid is recycled back to the ammonium nitrate granulator. Scrubber #3 is inspected, cleaned out, and filters and nozzles are replaced as needed whenever the granulator is shut down for maintenance. Maintenance activities are performed approximately once per month.

EUG No. 8 - Steam Generation Boilers

PCC currently operates three natural gas fired boilers at this facility. The boilers provide the steam needed to operate the various pieces of equipment at the facility. Boiler #1 has a maximum heat input rate of 53 MMBtu/hr. Boiler #2 has a maximum heat input rate of 80 MMBtu/hr. Boiler #3 has a maximum heat input rate of 100 MMBtu/hr. Boilers #1, #2, and/or #3 will operate as the primary steam generation units to support startup and normal process operations.

EUG No. 10 – Miscellaneous

Gasoline Storage Tank

PCC has a 1,000-gallon gasoline storage tank that was installed in 1965. The tank is subject to 40 CFR Part 63, Subpart CCCCCC, National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities.

EUG 10 also includes fugitive ammonia emissions from piping.

Out of Service Equipment

Ammonia Plant #1 (Reformer, Desulfurization, etc. – Sold and Removed)
Ammonia Plant #2 (Reformer, Desulfurization, etc. – Sold and Removed)
Ammonia Plant #3 (Reformer, Desulfurization, etc. – Sold and Removed)
Nitric Acid Plant #2 (Out of Service)
Nitric Acid Plant #3 (Out of Service)

Fugitives and Insignificant activities are detailed in following sections.

SECTION IV. EMISSIONS

Emissions calculation methods are carried forward from the existing permit and amended or supplemented as necessary to incorporate changes requested in the various applications submitted up to the date of drafting this permit. Emissions are based on the anticipated maximum production rates. Permit limits are based on these calculations and are justified through PSD analysis, including BACT analysis and modeling to document compliance with the NAAQS.

For all following illustrations of emissions, calculations carried out to the 2nd decimal place for criteria pollutants are rounded up to the next decimal place (whole 1/10th) for augmented fractions of 0.01 and higher and calculations carried out to the 3rd decimal place for hazardous air pollutants are rounded up to the next decimal place (whole 1/100th) for augmented fractions of 0.001 and higher.

EUG No. 1 - Ammonia Plant #4

Permit No. 2008-100-C (M-1) PSD increased the maximum ammonia production capacity of Ammonia Plant #4 from 700 tons per day (TPD) to 770 TPD. Ammonia Plants #1 and #3 were taken out of service as a result of the need to reduce NO_X emissions to meet the NAAQS as demonstrated by the latest air dispersion modeling and have been sold and removed from the facility. Emissions generated at the ammonia plant primarily includes products of combustion from the Primary Reformer (EU ID 101), emissions of volatile organic compounds (VOC) generated from the Condensate Steam Flash Drum (EU ID 102) and purge gas which consists of unregulated gases including hydrogen, nitrogen, argon, and methane.

Primary Reformer

The maximum heat input rating of the Ammonia Plant #4 reformer is 300 MMBtu/hour. Except for emissions of SO_2 and NO_X, calculations for combustion emissions are based on AP-42 emission factors, a gross calorific value of 1,040 Btu/scf for commercial natural gas, fuel demand, and annual operating hours of 8,760. Actual emissions are assumed to be the same as potential to emit (PTE). For Permit Nos. 2008-100-C (M-1) PSD and (M-2) PSD, NO_X emissions for Ammonia Plant #4 were based on the trial BACT limit of 0.12 lbs-NO_X/MMBtu. The basis for the Ammonia Plant #4 trial BACT limit and the justification were addressed in the memorandum of those permits. For this permit, based on results of the Re-BACT study, PCC is requesting limits on NO_X of 0.1146 Lbs/MMBTU (Upper Prediction Limit (UPL) – Normal Operation), 0.0748 Lbs/MMBTU (Mean Value – Normal Operation), and 0.1658 Lbs/MMBTU (UPL – SSM).

SO_2 emissions result from the combustion of a mixture of two fuel sources, namely pipeline natural gas and waste gas from the desulfurization unit. The ammonia process uses approximately 21,250 standard cubic feet of natural gas per ton of ammonia produced. For Plant #4, at a production rate of 770 TPD, this equates to 5,972 MMscf/yr. The facility estimates, based on data from past operations, that fuel sulfur content of the fuel gas mixture to the primary reformers can be as high as 20 grains/100 scf when the desulfurization unit is in operation. This would include some natural gas as there is not enough waste gas to run the primary reformers at desired capacity. Using 20 grains/100 scf, the maximum hourly rates of SO_2 emissions are calculated. For Ammonia Plant

#4, this results in 0.90 (natural gas fuel) + 2.13 (waste gas fuel) = 3.03, rounded to 3.1 TPY. The calculations assume 100% conversion of sulfur to SO_2.

Ammonia emissions from the Ammonia Plant #4 Reformer Stack (EU ID 101) depend on a combination of process unit operations in service and the production rate. The equipment affecting ammonia emissions include the flash gas and purge gas scrubbers in the Hydrogen Recovery Unit (ammonia process equipment), the purge gas scrubber in the AN Solutions Plant #2, and the Ammonia Plant #4 Primary Reformer, which is designed to combust scrubbed purge gas as a fuel substitute for natural gas. Normally, all of the aforementioned units are in operation but, depending on operational requirements, one or more of these units may be out of service for a period of time while the Ammonia Plant #4 Plant continues to operate.

To develop an emissions limit, PCC used mass balance derived emissions estimates (in lb/hr) from each operational scenario combined with estimates of the maximum number of hours per year that each scenario is expected to occur. These six scenarios are represented in the following discussion and the table. The hours/year values come from knowledge of process and operating history and PCC considers it to be conservative. The proposed limit represents an aggregate total of the individual estimates for each scenario. Note here that the hours used in the calculations for each scenario are not individual permit limits, but are only used to estimate the time operating in each scenario. As long as the actual, mass balance derived emission rates for each scenario are used with the actual operating hours recorded for compliance demonstration, and as long as the original hours/year estimates were conservative, PCC should be able to comply with the limit. The permit will require recording of the hours operating in each scenario. The alternate operating scenarios resulting from the equipment outages can be summarized as follows:

<u>Alternate Scenario 1 (Normal Operation</u>)

Under Scenario 1, which is normal operation, purge gas is routed through water scrubbers at the Hydrogen Recovery Unit (HRU) and then through the Ammonium Nitrate Purge Gas Scrubber (AN Purge Gas Scrubber) to reduce the ammonia concentration before it is fed to the Ammonia Plant #4 Primary Reformer (Primary Reformer) for combustion as a supplemental fuel. Ammonia emissions are at their lowest during this scenario due to the scrubbing and combustion operations.

<u>Alternate Scenario 2</u>

Under Scenario 2, the HRU and the AN Purge Gas Scrubber are shut down for maintenance or operational purposes (e.g., to limit the amount of weak AN solution from the scrubbers that would have to be disposed of), and the purge gas is not being routed to the Primary Reformer to prevent ammonia salts (present at a higher concentration in the un-scrubbed purge gas stream) from clogging the reformer burners. Under this scenario, ammonia emissions are the highest of any of the alternate scenarios, because the un-scrubbed purge gas bypasses the Primary Reformer and is emitted directly to the atmosphere.

Alternate Scenario 3

Under Scenario 3, the HRU is shut down for maintenance or operational purposes, but the AN Purge Gas Scrubber remains in operation. Because the ammonia concentration in being reduced at least partially in the AN Purge Gas Scrubber, the purge gas can be routed to the Primary Reformer for combustion. Ammonia emissions are higher under this alternate scenario than during normal operation, because the purge gas is not subjected to the additional scrubbing step in the HRU. However, the ammonia concentration in the purge gas is still significantly reduced due to the scrubbing operation in the AN Purge Gas Scrubber.

Alternate Scenario 4

Under Scenario 4, the HRU is shut down for maintenance or operational purposes, the Ammonia Plant #4 process is operating at a rate no greater than 300 ton/day, and the AN Purge Gas Scrubber remains in operation. However, the partially scrubbed purge gas is being routed around the Primary Reformer and emitted directly to the atmosphere. Ammonia emissions, although partially scrubbed, are elevated under this scenario because the purge gas stream is not being combusted in the Primary Reformer due to the lower production and/or firing rate of the reformer.

Alternate Scenario 5

Under Scenario 5, the HRU is operating and the AN Purge Gas Scrubber is shut down for maintenance or operational purposes (e.g., to limit the amount of weak AN solution from the scrubber that would have to be disposed of). Because the ammonia concentration is being reduced in the HRU, the purge gas can be routed to the Primary Reformer for combustion. Ammonia emissions are higher under this alternate scenario than during normal operation, but are still significantly reduced due to the partial scrubbing operation.

Alternate Scenario 6

Under Scenario 6, the HRU remains in operation and the AN Purge Gas Scrubber is shut down for maintenance or operational purposes (e.g., to limit the amount of weak AN solution from the scrubbers that would have to be disposed of). The purge gas stream is being routed around the Primary Reformer and emitted directly to the atmosphere. Ammonia emissions, although partially scrubbed, are elevated under this scenario, because the purge gas stream is not being combusted in the Primary Reformer due to operational constraints in the combustion process.

The table below summarizes the bypass configurations, the anticipated bypass hours per year, and the associated ammonia emissions.

Ammonia Emissions – Ammonia Plant #4 Primary Reformer Stack (EU ID 101)

Operating Scenario	Process Rate (TPD)	HRU Bypassed (Y/N)	AN Purge Gas Scrubber Bypassed (Y/N)	Reformer Bypassed (Y/N)	Estimated Hours Per Year In Mode	Ammonia Emissions (lbs/hr)	Ammonia Emissions (TPY)
1	770	No	No	No	6,456	0.01	0.03
2	770	Yes	Yes	Yes	216	425.30	45.93

Operating Scenario	Process Rate (TPD)	HRU Bypassed (Y/N)	AN Purge Gas Scrubber Bypassed (Y/N)	Reformer Bypassed (Y/N)	Estimated Hours Per Year In Mode	Ammonia Emissions (lbs/hr)	Ammonia Emissions (TPY)
3	770	Yes	No	No	1,440	2.13	1.53
4	300	Yes	No	Yes	240	41.43	4.97
5	770	No	Yes	No	240	0.97	0.12
6	770	No	Yes	Yes	168	48.52	4.08
Urea Plant #2 Head Tank Gas Stream					8,760	95.20	208.49
Total Emissions						**520.5 (1)**	**265.2**

(1) Sum of worst case Operating Scenario (Scenario 2) and Urea Plant #2 Head Tank.

300 MMBtu/hour Primary Reformer – Ammonia Plant #4

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Max. (lb/hr)	Annual (ton/yr)
CO	84.0	lbs-CO/MMscf	AP-42; Table 1.4-1	24.3	106.2
NO_X UPL – Normal Operation	0.1146 (1)	lbs-NO_x/MMBtu	Re-BACT Study	34.4	
NO_X Mean Value – Normal Operation	0.0748 (1)	lbs-NO_x/MMBtu	Re-BACT Study	22.5	98.3
NO_X UPL – Startup, Shutdown, and Purge Gas Out with Reduced Plant Operations	0.1658	lbs-NO_x/MMBtu	Re-BACT Study	49.8	
PM	7.6	lbs-PM/MMscf	AP-42; Table 1.4-2	2.2	9.6
$PM/PM_{10}/PM_{2.5}$	7.6	lbs-PM_{10}/MMscf	AP-42; Table 1.4-2	2.2	9.6
SO_2 primary fuel	0.25	gr-sulfur/100 scf (avg)	Supplier Data	NA (2)	0.9
SO_2 waste gas	20.0	gr-sulfur/100 scf (max)	Site Specific Test Data (Hourly) Supplier Data (Annual)	16.5 (2)	2.2
VOC	5.5	lbs-VOC/MMscf	AP-42; Table 1.4-2	1.6	7.0
Formaldehyde	0.075	lbs-Form./MMscf	AP-42; Table 1.4-3	0.03	0.10

(1) Factor during burning purge gas.
(2) Hourly limit based on worst case when burning waste gas and natural gas from desulfurization unit.

40.00 MMBtu/hour Converter startup heater – Ammonia Plant #4

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Max. (lb/hr)	Annual (ton/yr)
CO	84	lbs-CO/MMscf	AP-42; Table 1.4-1	3.3	14.2
NO_X	100	lbs-NO_x/MMBtu	AP-42; Table 1.4-1	3.9	16.9
PM	7.6	lbs-PM/MMscf	AP-42; Table 1.4-2	0.3	1.3
PM_{10}	7.6	lbs-PM_{10}/MMscf	AP-42; Table 1.4-2	0.3	1.3

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Max. (lb/hr)	Annual (ton/yr)
$PM_{2.5}$	7.6	lbs-$PM_{2.5}$/MMscf	AP-42; Table 1.4-2	0.3	1.3
SO_2 primary fuel	0.25	gr-sulfur/100 scf (avg)	Supplier Data	0.1	0.2
VOC	5.5	lbs-VOC/MMscf	AP-42; Table 1.4-2	0.3	1.0

Condensate Steam Flash Drum - Ammonia Plant #4

The following table illustrates a summary of pollutants emitted from this source, which are a mass balance calculation derived in the applications based on measured concentrations and maximum design steam discharge rate. Except methanol, the emissions were rounded to the next highest 1/10th decimal.

Permit Limits - Condensate Steam Flash Drum - Ammonia Plant #4

Pollutant	Concentration	Steam Discharge	Emissions	
	ug/mL/ppmw	lbs/hr	lbs/hr	TPY
VOC	1,827 ug/mL	1,050	2.0	8.4
Methanol	1,740 ug/mL	1,050	1.83	8.01
NH_3	7,750.0 ppmw	1,050	8.2	35.7

With the removal of Ammonia Plants #1 and #3, PCC no longer requests to include an enforceable permit limit. The revised PTE of 8.01 tons/year methanol, when considered with the methanol of 0.88 tons/year from the carbon dioxide vents is below the major source level.

Desulfurization Unit Regeneration

Desulfurization of natural gas used as a raw material in the process is done using carbon adsorption. Ammonia Plant #4 has its own associated desulfurization unit. Regeneration of the carbon is accomplished by flushing the carbon bed with natural gas heated to temperatures near 350 ^{o}F. Off-gases from the Desulfurization Unit Regeneration are routed to the reformer of the ammonia plant and combined with the natural gas fuel gas.

Carbon Dioxide Regenerator

Off-gases from the Carbon Dioxide Regenerator of Ammonia Plant #4 are routed back to the Carbon Dioxide Plant and/or the Urea Plants as needed, and excess amounts are vented.

Ammonia Plant #4 Startup/Shutdown Vents

Planned startups and shutdowns are scheduled and follow standard operating procedures to ensure proper operation as plant production rates are either increased gradually during a startup or decreased gradually during a shutdown. For emission calculation purposes for planned startups and shutdowns, it is assumed that the production rate affecting the CO emission rate is at or below 300 ton/day. During planned startups and shutdowns, CO emissions will be controlled by a process flare that is scheduled for installation within 18 months of final issuance of Permit M-6. The following discussions and tables illustrate both uncontrolled and controlled emissions of CO.

Uncontrolled CO Emissions during Startups and Shutdowns

Emissions from the startup/shutdown vents will be vented to a flare under normal operating conditions. As the plant currently operates, they will vent without control until the flare is installed. Uncontrolled emissions from these vents are estimated using the facility's design mass balance for the streams venting to each of the vents together with the design production rate for the plant. These estimates reflect the total stream composition and assume full stream flow (i.e., 100% valve open) exhausted through the vents.

EU ID 110a Startup/Shutdown Vent (combination of process vents B-1 and D-2)

Pollutant	Emission Factor		Source of Emission factor	Uncontrolled Emissions	
	Value	Units		Max. (lb/hr)	Annual (ton/yr)
CO (Startup/Shutdown)	937.0	lbs-CO/ton-Ammonia	Mass Balance	11,712.4	780.9

EU ID 110b Startup/Shutdown Vent (pre-methanator process vent)

Pollutant	Emission Factor		Source of Emission factor	Uncontrolled Emissions	
	Value	Units		Max. (lbs/yr)	Annual (ton/yr)
CO (Startup/Shutdown)	30.8	lbs-CO/ton-Ammonia	Mass Balance	384.7	128.3

Controlled Emissions During Startups and Shutdowns

EU ID 110 Startup/Shutdown Vent Flare

Pollutant	Emission Factor		Emission Factor Reference	Emissions	
				Max. (lb/hr)	Annual (ton/yr)
CO (Startup/Shutdown)			98% reduction of combined flow from two vents 110a and 110b	242.0	18.2

EU ID 111 Urea Plant #2 Ammonia Recovery Tank

Pollutant	Emissions	
	Max. (lb/hr)	Annual (ton/yr)
NH_3	36.5	49.8

Compliance with the NH_3 emission limits shall be documented by monitoring the ammonia concentration in the tank at least weekly. Liquid additions to the tank shall be managed to prevent the NH_3 concentration from reaching the saturation point of 17%.

EUG No. 2 – Urea Plants #1 and #2

All off-gases from Urea Plant #1 are recycled back into the process. Off-gases from Urea Plant #2 resulting from infrequent venting through pressure relief valves are vented subsurface to the Urea Plant #2 Ammonia Recovery Tank. The Urea Plant #2 Ammonia Recovery Tank uses water as an absorption media to recover ammonia. The applicant states that higher level releases of ammonia to the atmosphere would only occur in the event absorption capacity was exceeded. As stated above for EU ID 111, PCC will monitor the ammonia percentage at least weekly to ensure that the saturation point does not reach/exceed 17%. This monitoring is incorporated into the permit.

EUG No. 3 – Nitric Acid Plants

There have been three nitric acid plants permitted to operate at PCC – Nitric Acid Plant #1, Nitric Acid Plant #3, and Nitric Acid Plant #4. Nitric Acid Plant #3 has never been made operational and will be removed from the facility. The capacities of the two remaining plants are 240 tons per day (10 tons per hour) for Nitric Acid Plant #1 and 400 tons per day (16.7 tons per hour), for Nitric Acid Plant #4, for a total of 640 tons per day. Emissions of NO_X are generated as tail gas from the acid absorption towers from both plants. NO_X is the end result of a three-step reaction. First, ammonia and air are heated and oxidized using a catalyst to form nitric oxide and water. Second, the nitric oxide reacts with residual oxygen under high pressure to form nitrogen dioxide. Finally, the nitrogen dioxide is sent through an absorption tower, where it reacts with water to form aqueous nitric acid (HNO_3). Secondary air is introduced into the tower to re-oxidize NO (nitrogen II oxide) that is formed in the absorption process resulting in emissions of air and NO_X (NO_2 and NO).

NO_X emission controls for tail gases exiting the top of the absorption tower on Nitric Acid Plant #1 in past operations involved extended adsorption design technology to reduce NO_X emissions prior to further treatment in a non-selective catalytic reduction (NSCR) unit, referred to as the fumeabator. Part of the NO_X reduction process in the fumeabator involved the introduction of natural gas into the fumeabator. The introduction of natural gas and its associated combustion in the fumeabator resulted in collateral CO emissions. As of the drafting of this permit, the fumeabator has been removed and is being replaced by a non-selective catalytic burner, which will be followed by a SCR unit as part of the requirements to be implemented under the EPA Consent Decree. The catalytic burner at Nitric Acid Plant #1 may be fired on natural gas or syngas from Ammonia Plant #4. NO_X emissions will decrease, but decreases in CO emissions are not certain. Tail gases exiting the top of the absorption tower on Nitric Acid Plant #4 pass through a SCR unit for NO_X control prior to discharge to the atmosphere.

Annual emissions of NO_X from Nitric Acid Plants #1 and #4 are based on the long-term limit of 0.6 lbs/ton of nitric acid production taken from the EPA consent decree. Compliance with the long term limit is demonstrated on a 365-day rolling average basis. The EPA Consent Decree requires CEMS for NO_X monitoring.

NO_X Emissions – Nitric Acid Plants #1 and #4

NO_X Emissions	Controlled NO_X Emissions Limit (lb/ton-100% HNO_3)		Nitric Acid Produced (ton/hr)	Controlled NO_X Emissions ton/yr
	365-day Rolling Average **	3-hour Rolling Average*		
Plant #1 – EU Point 301	0.6	1.0	10.0	26.3
Plant #4 – EU Point 303	0.6	1.0	16.7	43.8
Totals				**70.1**

* Effective January 1, 2018 or upon startup, whichever date is later; excludes SSM related emissions.

** Effective January 1, 2019, or 365 operating days following startup, whichever date is later; includes SSM related emissions.

The exhaust gasses from the SCR will have ammonia slip emissions. They are requested as enforceable limits as follows:

Ammonia Emissions – Nitric Acid Plants #1 and #4

NH_3 Emissions	NH_3 Emissions	
	lb/hr	ton/yr
Plant #1 – EU Point 301	5.4 Normal Operations 41.6 Startup/Shutdown Related	29.1
Plant #4 – EU Point 303	7.3 Normal Operations 61.9 Startup/Shutdown Related	52.5
Totals	**103.5***	**81.6**

* Maximum hourly rate occurs if both plants have Startup/Shutdown emissions at the same time.

For demonstration of compliance with the proposed NH_3 permit limits, the applicant proposes initial performance testing during normal operations at 90% of the short term maximum capacity to verify the emissions factors/rates.

The NSCR at Nitric Acid Plant #1 will burn only natural gas and ammonia plant synthesis gas. The maximum emissions from the NSCR at Nitric Acid Plant #1 (EU ID 301) will be limited as follows.

EU ID 301 – Nitric Acid Plant #1 Natural Gas Emissions

Pollutant	Maximum (lb/hr)	Annual (ton/yr)
CO (based on 2012 test)	22.0	96.4
PM	0.1	0.1
PM_{10}	0.1	0.1
$PM_{2.5}$	0.1	0.1
SO_2	0.1	0.1
VOC	0.1	0.1

EUG No. 4 – Nitric Acid Preheaters, EU IDs #401 and #403

Nitric Acid Plants #1 and #4 – Preheaters

The preheaters at each of the nitric acid plants are identical in heat input rating. Emissions generated from the Nitric Acid Plant Preheaters are primarily emissions of combustion. The maximum heat input rating of each heater is 20 MMBtu/hour. Calculations of combustion emissions for each heater are based on the emission factors listed in the table below and a gross calorific value of 1,040 Btu/scf. Annual emissions are based on 8,760 continuous hours per year. Actual emissions are the same as potential to emit (PTE). The following table summarizes the methodology used to calculate emissions, the results of the calculations for the total combined emissions for the two preheaters, and the requested permit limits.

Permit Limits - Nitric Acid Plants #1 and #4 – Preheaters

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	3.4	14.2
NO_X	50.0	lbs/MMscf	AP-42; Table 1.4-1	2.0	8.6
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.4	1.4
PM_{10}	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.4	1.4
$PM_{2.5}$	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.4	1.4
SO_2	1.5	lbs/MMscf	AP-42; Table 1.4-2	0.2	0.4
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	0.4	1.0

EUG No. 5 – Carbon Dioxide Vents 501a, 501b, and 501c

Calculations of carbon monoxide (CO) emissions are based on mass balance using a known concentration of the subject pollutant from past operations, the maximum carbon dioxide (CO_2) throughput rate (maximum rate to CO_2 Plant and/or Urea Plants), and continuous operation (8,760 hours per year). CO_2 produced from Ammonia Plant #4 can be utilized in the CO_2 plant and/or either of the two Urea Plants (#1 and #2). Carbon dioxide venting may occur when the capacity of CO_2 Plant and/or the Urea Plants #1 and #2 are reduced or shut down. CO_2 venting and CO emissions can occur from a combination of vents located at the Ammonia Plant #4 and/or the Carbon Dioxide Plant, as follows: the CO_2 Tower Vent (EU ID 501a) at Ammonia Plant #4 or the CO_2 Vent (EU ID 501b) or the Pressure Control Vent (EU ID 501c) at the Carbon Dioxide Plant.

CO limits for Ammonia Plant #4 were adjusted in permit No. 2008-100-C (M-1) PSD to account for the revision of the production rate from 700 TPD to 770 TPD. Carbon dioxide is produced at a ratio of 1.25 ton/ton of ammonia production developed from on-site test data and throughput. CO is then calculated based on 0.1 lb/ton of carbon dioxide. These emissions are expected to be the worse-case scenario if venting occurred 8,760 hours per year.

Permit Limits - Carbon Dioxide Vents – Ammonia Plant #4 (EU ID 501a, 501b and 501c)

CO/CO_2 Venting Scenarios	**Emissions Factor**	**Carbon Dioxide Vented**	**Carbon Monoxide Emissions**	
	lb/ton	**ton/hr**	**lb/hr**	**ton/yr**
Ammonia Plant #4 to EU ID #s: 501a, 501b, 501c	0.1	40.1	4.1	17.6
Total			**4.1**	**17.6**

Permit No 2008-100-C (M-2) established limits for CO emissions from Ammonia Plants #1 and #3. Permit Application No. 2008-100-C (M-6) requested emission limits for NH_3 (ammonia), methanol and VOC emissions from all three ammonia plants. Ammonia Plants #1 and #3 were subsequently sold and removed. For compliance demonstration purposes, emissions from EU IDs 501b and 501c will be accounted for in the calculation of emissions at EU ID 501a.

Permit Limits - Carbon Dioxide Vents – Ammonia Plant #4 (EU ID 501a, 501b and 501c)

Pollutant	**Emissions Factor Lbs/throughput basis**		**Throughputs TPH**	**Emissions**	
				Lbs/hr	**TPY**
NH_3	0.128 (1)	lb/ton- NH_3	32.1	4.2	18.1
Methanol	0.006 (2)	Lb/ton-NH_3	32.1	0.21	0.88 (4)
VOC	0.044 (3)	Lb/ton- NH_3	32.1	1.5	6.3

1) Highest stack test data from Ammonia Plant #3 performed on December 12, 2012 (502 Vent: 0.41 lb/hr at 96 TPD ammonia production rate with 25% contingency).
2) Highest stack test data from Ammonia Plant #3 performed on December 12, 2012 (502 Vent: 0.02 lb/hr at 96 TPD ammonia production rate with 25% contingency).
3) Highest stack test data from Ammonia Plant #1 performed on December 10, 2012 (501c Vent: 0.14 lb/hr at 96 TPD ammonia production rate with 25% contingency).
4) Methanol is not rounded up to 0.9 because PCC is not requesting a permit limit.

EUG No. 6 - Ammonium Nitrate Plants

<u>Ammonium Nitrate Plant #1 and Plant #2 Neutralizers</u>

Ammonium Nitrate Plant #1 and Plant #2 Neutralizers are identical in throughput capacity. Each plant is rated at an hourly liquid ammonium nitrate production capacity of 23.8 tons per hour (rounded up from 23.75) and an annual liquid ammonium nitrate production capacity of 208,050 tons per year. Emissions are controlled by in-stack condensers. As noted earlier, steam that is not condensed as a result of this heat transfer is subsequently condensed in a water cooled condenser. To reduce monitoring requirements, PCC has elected to make the neutralizers a closed process which effectively eliminates point source emissions. However, as a contingency for potential fugitive emissions, PCC estimates that 1% of the emission-laden steam escapes. Calculations for emissions of ammonia and ammonium nitrate are based on the liquid ammonium nitrate production rate, emission factors used during Wil-Gro's operation of the facility, and continuous operation (8,760 hours per year). Emission factors were developed as illustrated in the table, where 0.4985 is the amount of steam emitted per ton of product, and fugitive emissions are estimated at 1%. Concentration values of 1.0% and 0.05% for ammonia, and 0.5%, and 0.05% for ammonium nitrate (i.e., PM/PM_{10}) were used for hourly and annual emissions calculations, respectively. Since this is a batch process, hourly emissions cannot be annualized at 8,760 hours to obtain annual emissions. Emissions of particulate matter are based on AP-42 emission factors. Actual emissions are the same as PTE. The following table summarizes the methodology used to calculate emissions and the results of the calculations for each of the two neutralizers.

Ammonium Nitrate Plant #1 and Plant #2 Neutralizers (EU ID #601 and #602 Individual Limits)

Pollutant	Emission Factor	Source of Emission factor	Emissions	
	lbs/ton NH_4NO_3		Max. (lb/hr)	Annual (ton/yr)
Non-PM Emissions				
NH_3 (hourly)	0.0997	0.4985 x ton/ton x 1.0% x 1% x 2,000 lbs/ton	2.4	NA
NH_3 (annual)	0.0050	0.4985 x ton/ton x 0.05% x 1% x 2,000 lbs/ton	NA	0.6
PM Emissions				
$PM/PM_{10}/PM_{2.5}$ (hourly)	0.0499*	0.4985 x ton/ton x 0.5% x 1% x 2,000 lbs/ton	1.2	NA
$PM/PM_{10}/PM_{2.5}$(annual)	0.0050*	0.4985 x ton/ton x 0.05% x 1% x 2,000 lbs/ton	NA	0.6

* Based the AP-42 factor of 0.004 - 0.43 lbs-PM/ton-product for neutralizers and the applicant's best engineering judgment.

These emissions are for the neutralizers only. They are included with the Insignificant Activities list. The rundown tanks for each process provide intermediate storage for ammonium nitrate product. Ammonia emissions from the rundown tank vents are minimal (similar to the Ammonia Nitrate Storage Tanks) and considered as insignificant sources. Back half testing is not relevant to this issue. NH_4NO_3, (as particulate matter) is emitted from the neutralizers and exists as condensable particulate in the steam that is emitted. All of the particulate matter emitted is condensable, and assumed to be $PM_{10}/PM_{2.5}$. The emissions estimates provided in the application use site specific information to calculate how much steam is emitted and how much condensable PM is contained in the steam; thus, the use of AP-42 factors to estimate any additional condensable PM emissions would be double counting.

EUG No. 7 - Granulator Scrubbers

Granulator Scrubbers #1, #2, and #3

Granulator Scrubbers #1, #2, and #3 are identical in throughput capacity. Each scrubber is rated to handle emissions from the production of 16.67 tons per hour (400 tons/day; 146,000 tons per year) of dry ammonium nitrate. Emissions of ammonia and particulate matter are based on AP-42 (10/96) Table 8.3-2 emission factors and annual operating hours of 8,760. Actual emissions are the same as PTE. The following table summarizes the methodology used to calculate emissions and the results of the calculations for each of the three scrubbers.

Granulator Scrubbers #1, #2, and #3 (individual limits)

Pollutant	Emission Factor	Source of Emission factor	Emissions	
	lbs/ton NH_4NO_3		Maximum (lb/hr)	Annual (ton/yr)
PM	0.04	AP-42, Table 8.3-2, pan granulators	0.7	3.0
$PM_{10}/PM_{2.5}$	0.04	AP-42, Table 8.3-2, pan granulators	0.7	3.0

Pollutant	Emission Factor	Source of Emission factor	Emissions	
	lbs/ton NH_4NO_3		Maximum (lb/hr)	Annual (ton/yr)
NH_3	0.14	AP-42, Table 8.3-2, pan granulators	2.4	10.3

EUG No. 8 - Boilers

Boiler #1, Boiler #2 and Boiler #3

Permit Nos. 2008-100-C (M-1) & (M-2) PSD revised the rating for Boiler #1 from 80.0 MMBtu/hr down to 53 MMBtu/hr. Boiler #2 remains at 80.0 MMBtu/hour. Calculations of combustion emissions are based on the emission factors listed in the table below, fuel having a gross calorific value of 1,040 Btu/scf, and annual operating hours of 8,760. A permit amendment dated May 17, 2016 requested permit limits for Boiler #3 based on 8,760 hours of operation annually and emissions factors from AP-42 (7/98), Table 1.4-1 considering low NO_X burners. Actual emissions are the same as potential to emit (PTE). The following tables summarize the methodology used to calculate emissions and the results of the calculations for each boiler.

Boiler #1, EU ID 801 (53 MMBtu/hr)

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	4.3	18.8
NO_X	50.0	lbs/MMscf	AP-42; Table 1.4-1	2.6	11.2
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.4	1.7
PM_{10}	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.4	1.7
$PM_{2.5}$	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.4	1.7
SO_2	0.6	lbs/MMscf	AP-42; Table 1.4-2	0.1	0.2
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	0.3	1.3
Formaldehyde	0.075	lbs/MMscf	AP-42; Table 1.4-3	0.01	0.02

Boiler #2, EU ID 802 (80 MMBtu/hr)

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	6.5	28.3
NO_X	50.0	lbs/MMscf	AP-42; Table 1.4-1	3.9	16.9
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.6	2.6
PM_{10}	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.6	2.6
$PM_{2.5}$	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.6	2.6
SO_2	0.6	lbs/MMscf	AP-42; Table 1.4-2	0.1	0.3
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	0.5	1.9
Formaldehyde	0.075	lbs/MMscf	AP-42; Table 1.4-3	0.01	0.03

Boiler #3, EU ID 803 (100 MMBtu/hr)

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	8.1	35.4
NO_X	50.0	lbs/MMscf	AP-42; Table 1.4-1	4.9	21.1
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.8	3.3
PM_{10}	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.8	3.3
$PM_{2.5}$	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.8	3.3
SO_2	0.6	lbs/MMscf	AP-42; Table 1.4-2	0.1	0.3
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	0.6	2.4
Formaldehyde	0.075	lbs/MMscf	AP-42; Table 1.4-3	0.01	0.04

EUG No. 9 - Cooling Towers

Cooling Tower #1 has a circulation capacity of 2,592,000 gallons per hour and uses an induced draft system. It uses no chromium additives, and the only pollutant emitted is particulate matter (as Total Dissolved Solids). Permit No. 2008-100-C (M-2) PSD provided for an increase in the circulation rate from 1,470,000 gallons per hour to 2,592,000 gallons per hour and the associated increase in particulate matter emissions necessary to support cooling cell upgrades to support operation of Ammonia Plants #1 and #3. Emission calculations for the first three issued permits were originally based on a method from AP-42 Chapter 13.4. However, that method does not provide a means of speciation to assess PM and $PM_{2.5}$ emissions. For $PM_{2.5}$ emissions, they were assumed equal to PM_{10}, causing an over-conservatively high estimate of $PM_{2.5}$. Note that the AP-42 method states that it is already conservatively high for PM_{10}. The detrimental effect of this overestimation shows up later in the PSD evaluation with a significant increase in $PM_{2.5}$ when considering successive modifications (to the cooling towers) and aggregation. To provide what PCC believes to be a more realistic assessment of $PM_{2.5}$ emissions, they adopted a method that speciates PM, PM_{10}, and $PM_{2.5}$, published in a technical memorandum by the New Mexico Environment Department – Air Quality Bureau titled "Calculating TSP, PM-10 and PM-2.5 from Cooling Towers. This method is identical to the AP-42, Chapter - 13.4 method of using the product of total liquid drift (TLD) and total dissolved solids (TDS), except the additional information from the New Mexico memo provides for the speciation of PM, PM_{10}, and $PM_{2.5}$ emissions. The manufacturer's TLD of 0.01%, site-specific total dissolved solids (TDS) concentrations of 3,059 ppmw (maximum per hour data point plus 15%) and 1,699 ppmw (annual average data point plus 15%), and annual operating hours of 8,760 were used to calculate the emissions indicated in the table below.

Actual emissions are the same as potential to emit (PTE). The following table summarizes the results of the calculations for Cooling Tower #1.

Cooling Tower #1

Pollutant	Emissions	
	Maximum (lb/hr) (1)	Annual (ton/yr) (2)
PM	6.6	16.1

Pollutant	Emissions	
	Maximum (lb/hr) (1)	Annual (ton/yr) (2)
PM_{10}	4.7	11.3
$PM_{2.5}$	0.01	0.04

(1) Based on 3,059 ppmw TDS maximum concentration.
(2) Based on 1,699 ppmw annual average TDS concentration.

Cooling Tower #2 has a circulation capacity of 3,264,000 gallons per hour and uses an induced draft system. It uses no chromium additives, and the only emission is particulate matter. Emissions calculation methods, are based on speciated fractions for PM, PM_{10}, and $PM_{2.5}$ provided by the New Mexico Environment Department – Air Quality Bureau in its technical memorandum entitled "Calculating TSP, PM-10 and PM-2.5 from Cooling Towers and manufacturer information using the product of total liquid drift (TLD) and total dissolved solids (TDS) to obtain estimates of PM, PM_{10}, and $PM_{2.5}$ emissions. A manufacturer's TLD of 0.008%, TDS concentrations of 2,749 ppmw (maximum per hour data point plus 15%) and 1,955 ppmw (annual average data point plus 15%), and annual operating hours of 8,760 were used to calculate the emissions indicated in the table below. An upgrade to Cooling Tower #2 to meet the proposed drift elimination values was completed before issuance of Permit No. 2008-100-C (M-2) PSD. Actual emissions are the same as potential to emit (PTE). The following table summarizes the results of the calculations for Cooling Tower #2.

Cooling Tower #2

Pollutant	Emissions	
	Maximum (lb/hr) (1)	Annual (ton/yr) (2)
PM	6.0	18.7
PM_{10}	4.2	13.2
$PM_{2.5}$	0.01	0.04

(1) Based on 2,749 ppmw TDS maximum concentration.
(2) Based on 1,955 ppmw annual average TDS concentration.

EUG No. 10 Miscellaneous

EU ID 1001 – Ammonia Storage Flare

The ammonia storage flare is used only in case of emergency/equipment malfunction, primarily when there is a power failure affecting the ammonia storage tank refrigeration systems. There are primary and secondary refrigeration compressors on the storage tank that are connected to different electrical services. As ammonia product is pumped to the tank, the tendency is for some ammonia to vaporize out of the liquid state at the top of the tank. This vapor is then picked up by the primary refrigeration unit, which converts it back to liquid and then sends it in a return loop back into the tank. If a power failure occurs affecting the primary unit, the secondary unit is engaged and the refrigeration return loop is continued. This transition to the secondary unit (or backup refrigeration system) happens very quickly, usually occurring in less than 5 minutes, and would not likely result in any ammonia being vented to the flare. If a power failure occurs affecting both the primary and the secondary refrigeration compressors, the ammonia plant would also be affected, or shut down. Thus, potential scenarios whereby ammonia would be vented to the flare occur when a rise in the temperature of the tank is caused by ambient conditions or an equipment failure. The rate of a temperature rise is minimized by an 8-inch layer of insulation installed on the tank. Once the temperature of the tank is sufficient to vaporize the liquid ammonia above an established pressure set point, a pressure control valve opens, and the vapor is released to the flare. The ammonia storage tank pressure relief vent is set to open when total pressure rises above maximum storage pressure by a margin of 1.5 psig. The Ammonia Storage Flare Pilot runs continuously so that the flare is ready to be ignited whenever needed. Emissions from the Ammonia Storage Flare Pilot are generated from the combustion of natural gas on a constant schedule. The maximum heat input rating of the Ammonia Storage Flare Pilot is 0.0683 MMBtu/hour. Operating 8,760 hours annually equates to a fuel demand of 133 MMBtu/year. Calculations of combustion emissions are based on the emission factors listed in the table below and the fuel demand of 133 MMBtu/year, which equates to a natural gas fuel input of 0.1280 MMscf/year based on a gross calorific value of 1,040 Btu/scf. Actual emissions are the same as potential to emit (PTE). The following table summarizes the methodology used to calculate emissions and the results of the calculations for the total combined emissions for the flare. This will be an insignificant activity.

Pollutant	**Emission Factor**		**Source of Emission factor**	**Emissions**	
	Value	**Units**		**Maximum (lb/hr)**	**Annual (ton/yr)**
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	<0.1	<0.1
NO_X	100.0	lbs/MMscf	AP-42; Table 1.4-1	<0.1	<0.1
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	<0.1	<0.1
PM_{10}	7.6	lbs/MMscf	AP-42; Table 1.4-2	<0.1	<0.1
$PM_{2.5}$	7.6	lbs/MMscf	AP-42; Table 1.4-2	<0.1	<0.1
SO_2	0.6	lbs/MMscf	AP-42; Table 1.4-2	<0.1	<0.1
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	<0.1	<0.1

The following estimate of emissions generated when burning ammonia in the flare are informational only. These emissions would occur during upset conditions and are to be reported as excess emissions. They are not permitted and are also not included in the facility-wide emissions summary.

The applicant has estimated emissions based on a technical bulletin published by the Texas Commission on Environmental Quality (TCEQ) for burning waste gas containing ammonia. The TCEQ bulletin is available at:

https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/emiss_calc_flares.pdf

The flare is a smokeless flare designed to burn waste ammonia at a rate of approximately 1,405 lb-ammonia/hr from the storage tank. The flare system has a 99% destruction efficiency for ammonia. The TCEQ bulletin works an example emissions calculation for a waste gas stream containing mostly ethylene, ethane, and butane, with smaller amounts of propylene, propane, ammonia, and hydrogen (by mass content).

To estimate emissions generated from the flare at the Pryor Chemical Company facility, PCC converted the mass of ammonia burned (1,405 lbs/hr) to a volumetric flow rate of 530 scfm and estimated that a volume of assist natural gas of 250 scfm is needed to bring the heat input value of the mixture to 566 Btu/scf for proper combustion, for a total gas mixture flow rate of 780 scf/minute. PCC then used the emission factors from the TCEQ bulletin to calculate emissions of NO_X and CO and assumed that excess ammonia not converted to NO_X is converted to inert products such as nitrogen and water. The emission factor for NO_X from the TCEQ bulletin happens to be twice that of the factor found in Table 13.5-1 of AP-42 (1/95) for industrial flares. The AP-42 bulletin states that waste gases to be flared must have a fuel value of at least 200 to 250 Btu/ft^3 for complete combustion; otherwise fuel must be added. Further into the discussion, the bulletin states that flare gases with less than 450 Btu/ft^3 do not smoke. It also states that in some cases, even flaring waste gases having the necessary heat content will also require supplemental heat and that if fuel-bound nitrogen is present, flaring ammonia with a heating value of 365 Btu/ft^3 will require higher heat to minimize nitrogen oxides (NO_X) formation. PCC's estimates of emissions are:

<u>NO_X emissions:</u>

Thermal NO_X:

0.138 lb/MMBtu x 566 Btu/scf x 1 MMBtu/10^6 Btu x 780 scf/min x 60 min/hr = 3.66 lb/hr

Fuel NO_X:

1,405 lb/hr x (0.005) = 7.03 lb/hr

Total NO_X:

Thermal NO_X (3.66 lb/hr) + Fuel NO_X (7.03 lb/hr) = 10.69 lb/hr

CO emissions:

0.2755 lb/MMBtu x 566 Btu/scf x 1 MMBtu/10^6 Btu x 780 scf/min x 60 min/hr = 7.30 lb/hr

EU ID 1001 – Ammonia Storage Flare

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
NOx	10.7	Minimal
CO	7.3	Minimal

Emission rates in tons/year have not been calculated due to the limited amount of time the system would be venting to the flare under emergency conditions. These upset condition emissions will be reported as excess emissions.

EU ID 1002 – Gasoline Storage Tank

The facility is subject to 40 CFR 63, Subpart CCCCCC, National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities.

Compliance with the VOC emission limit in the following table will be demonstrated by limiting the monthly throughput of gasoline to 10,000 gallons. Permittee will maintain records of gasoline throughput. The HAP emissions are for informational purposes only, no limits are imposed.

EU ID 1002 – Gasoline Storage Tank

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
VOC	3.9	0.4
Benzene	0.20	0.02
Ethyl Benzene	0.08	0.01
Cumene	0.04	0.01
Methyl Tert-Butyl Ether	0.59	0.06
Toluene	0.59	0.06
Xylene	0.47	0.05

EU ID 1003 – NH_3 Fugitives – Valves/Seals/Flanges/Connections

Supplemental information concerning non-VOC fugitives from equipment in anhydrous ammonia, 16% ammonia vapor, and 16% ammonia solution service was submitted by PCC based on numerous potential sources considered throughout the facility. PCC offers the following calculations, which are considered to represent a conservatively high estimate, based on the approximate number of components in service and emission factors from "Emission Estimation Technique Manual for Synthetic Ammonia Manufacturing", March 2004, Table 8.

Fugitive Emissions (Process Piping in Anhydrous Ammonia Service)

Component Type	Type of Service	Count	Emissions Factors (lb/hr-component)	Potential Emissions	
				(lb/hr)	(ton/yr)
Valves	Gas	325	0.0132	4.3	18.8
	Light Liquid	63	0.0089	0.6	2.5
Pump Seals/ Compressor Seals	Light Liquid	2	0.0439	0.1	0.4
	Gas	10	0.5027	5.1	22.1
Pressure Relief Valves	Gas	62	0.2293	14.3	62.3
Connectors	All	225	0.0041	1.0	4.1
Open-ended Lines	All	0	0.0038	N/A	N/A
Sampling Connections	All	0	0.0331	N/A	N/A
Total				**25.4**	**110.2**

Fugitive Emissions (Process Piping in 16% Aqueous Ammonia Solution Service)

Component Type	Type of Service	Count	Emissions Factors (lb/hr-component)	Potential Emissions (lb/hr)	Potential Emissions (ton/yr)
Valves	Gas	0	0.002112	N/A	N/A
	Light Liquid	684	0.001424	1.0	4.3
Pump Seals/ Compressor Seals	Light Liquid	24	0.007024	0.2	0.8
	Gas	0	0.080432	N/A	N/A
Pressure Relief Valves	Gas	0	0.036688	N/A	N/A
Connectors	All	656	0.000656	0.5	1.9
Open-ended Lines	All	13	0.000608	0.1	0.1
Sampling Connections	All	25	0.005296	0.2	0.6
Total				**2.0**	**7.7**

Fugitive Emissions (Process Piping in 16% Ammonia Vapor Service)

Component Type	Type of Service	Count	Emissions Factors (lb/hr-component)	Potential Emissions (lb/hr)	Potential Emissions (ton/hr)
Valves	Gas	60	0.002112	0.2	0.6
	Light Liquid	0	0.001424	N/A	N/A
Pump Seals/ Compressor Seals	Light Liquid	0	0.007024	N/A	N/A
	Gas	4	0.080432	0.4	1.5
Pressure Relief Valves	Gas	9	0.036688	0.4	1.5
Connectors	All	59	0.000656	0.1	0.2
Open-ended Lines	All	0	0.000608	N/A	N/A
Sampling Connections	All	0	0.005296	N/A	N/A
Total				**1.1**	**3.8**

Emissions Summary

Facility-Wide Summary EUG/EU	NO_X (TPY)	CO (TPY)	PM (TPY)	PM_{10} (TPY)	$PM_{2.5}$ (TPY)	VOC (TPY)	SO_2 (TPY)	NH_3 (TPY)
EUG No. 1 – Ammonia Plant								
Ammonia Plant #4 – 300 MMBtu/hr Primary Reformer EU ID 101	98.3	106.2	9.6	9.6	9.6	7.0	3.1	265.2*
Ammonia Plant #4 Startup/Shutdown Vent Flare EU ID 110	0.2	81.9	0.1	0.1	0.1	0.1	0.1	
Ammonia Plant #4 Condensate Steam Flash Drum EU ID 102						8.4		35.7
Ammonia Plant #4 Converter startup heater EU ID 107	16.9	14.2	1.3	1.3	1.3	1.0	0.2	
Urea Plant #2 Ammonia Recovery Tank EU ID 111								49.8
EUG No. 3 – Nitric Acid Plants								

Facility-Wide Summary **EUG/EU**	**NO_X (TPY)**	**CO (TPY)**	**PM (TPY)**	**PM_{10} (TPY)**	**$PM_{2.5}$ (TPY)**	**VOC (TPY)**	**SO_2 (TPY)**	**NH_3 (TPY)**
Plant #1 – EU Point 301	26.3	96.4	0.1	0.1	0.1	0.1	0.1	29.5
Plant #4 – EU Point 303	43.8							59.3
EUG No. 4 – Nitric Acid Preheaters								
Plant #1 and #4 – Preheaters EU ID #s 401 and 403	8.6	14.2	1.4	1.4	1.4	1.0	0.4	
EUG No. 5 – Carbon Dioxide Vents								
Carbon Dioxide Vent – Ammonia Plant #4 (EU ID 501a, 501b, and 501c)		17.6				6.3		18.1
EUG No. 6 - Ammonium Nitrate Plants Neutralizers								
Plant #1 and Plant #2 EU ID #s 601 and 602			1.2	1.2	1.2			1.2
EUG No. 7 - Granulator Scrubbers								
Granulator Scrubber #1, #2, and #3			9.0	9.0	9.0			30.9
EUG No. 8 - Boilers								
Boiler #1	11.2	18.8	1.7	1.7	1.7	1.3	0.2	
Boiler #2	16.9	28.3	2.6	2.6	2.6	1.9	0.3	
Boiler #3	21.1	35.4	3.3	3.3	3.3	2.4	0.3	
EUG No. 9 - Cooling Towers								
Cooling Tower No. 1			16.1	11.3	0.04			
Cooling Tower No. 2			18.7	13.2	0.03			
EUG No. 10								
Gasoline Storage Tank EU ID 1002						0.4		
Ammonia Fugitives EU ID 1003								121.7
Totals	**243.3**	**413.0**	**65.1**	**54.8**	**30.5**	**29.9**	**4.7**	**611.4**

* This is the sum of ammonia-containing gases from various sources that can be vented at the Ammonia Plant #4 Primary Reformer.

Insignificant Activities

The insignificant activities identified and justified in the application are duplicated in the following table. Appropriate recordkeeping for these activities is indicated under Paragraph 1 below with an "*"; additional detail is included in the Specific Conditions, as appropriate.

Activities having the potential to emit no more than 5 TPY (actual) of any criteria pollutant. Records sufficient to verify actual emissions.

TANKS	
Name and Contents	**Capacity (gallons)**
Urea Plant Feed (Ammonia Head Tank)	15,857
CO_2 Plant Ammonia Recovery Tank	2,024
Ammonium Nitrate Plant #1 Rundown Tank	950
Ammonium Nitrate Plant #2 Rundown Tank	950
OBT Mix Tank	36,500
Ammonium Nitrate Storage Tank	267,314
U.A.N. Blend Tank	57,337
2 – U.A.N. Storage Tanks (AS & DS)	3,760,346 each
2 – U.A.N. Storage Tanks (BS & CS)	116,471 each
Diesel Fuel Storage	1,000

Granular Ammonium Nitrate Storage, Handling, and Loading/Unloading operations
Ammonia Truck and Railcar Loading
Ammonia Plant #4 Purge Gas Scrubber Vent
Ammonia Plant #4 Hydrogen Recovery Unit – Mole Sieve Regeneration
Ammonia Plant #4 – Syn-Gas Startup/Shutdown Vent 110c
Portable Flare to support maintenance activities to control ammonia releases
Maintenance Painting
Ammonia Plants #1 and #2 Neutralizers
0.0683 MMBtu/hour Pilot - Ammonia Flare Pilot -
0.39 MMBtu/hrPilot - Ammonia Plant #4 Startup/Shutdown Vent Flare (EU ID 110)
Catalyst Building Fume Hood
Catalyst Building Pelletizing Room Exhaust Vent
Catalyst Screener

SECTION V. PREVENTION OF SIGNIFICANT DETERIORATION ANALYSIS

PSD analyses were done for Permit Nos. 2008-100-C PSD, 2008-100-C (M-1) PSD and 2008-100-C (M-2) PSD. Those analyses are not repeated here. A brief summary of the applicability of PSD to each application listed in the introduction of this permit memo is included in the following discussion. Note that certain evaluations may include emissions units that were later removed, but that is only for purposes of determining what the permitting requirements would have been for that particular application.

Permit Application No. 2008-100- TV, received June 7, 2010:

This application was submitted for the operating permit for the original PSD construction permits and is pending issuance of the permit application(s) submitted for modifications and construction. No further PSD analysis is needed for this application at this time.

Amendment to Permit No. 2008-100-TV dated December 15, 2010.

This application was for amendments to the application received June 7, 2010. With the exception of the following requested changes, all revisions requested in this application were addressed in subsequent applications and evaluations.

- Revise annual NO_X emissions limits for Nitric Acid Plants #1, #3 and #4 to 67.2 TPY, 50.4 TPY and 182.5 TPY, respectively, consistent with maximum process design capacities and to limit increase NO_X emissions total to below the significance level for NO_X of 40 TPY.
- Add hourly and annual carbon monoxide emissions limits for Nitric Acid Plants #1 and #3 to account for fuel combustion at the fumeabators. Fuels will include natural gas, purge gas, or syngas.
  Nitric Acid Plant #1: 4.0 lbs/hr-CO; 16.8 TPY-CO
  Nitric Acid Plant #3: 3.0 lbs/hr-CO; 12.6 TPY-CO
- Revise PM_{10} emissions limit for each Nitric Acid Plant Preheater (EU ID 401, 402 and 403) from 0.2 lbs/hr to 0.11 lbs/hr.
- Revise the compliance demonstration method where it states "*Compliance with the carbon dioxide venting and carbon monoxide emission limits shall be demonstrated by multiplying the actual daily ammonia production total by 1.25, which is the stoichiometric ratio of CO_2 generated from the ammonia production process with a contingency; multiplying that product by an industry established carbon monoxide percentage of 0.1; and then dividing the result by the process equipment (i.e., ammonia process equipment) operating hours for that day*", replacing "*carbon dioxide venting*" with "*carbon monoxide venting*", and replacing "*percentage of 1.1*" with "*ratio of 0.1 lbs CO per ton CO_2*".

None of the above listed revisions are due to a physical change in any of the emissions units or processes. The only permits issued subsequent to this request to revise NO_X limits for the Nitric Acid Plants, i.e. Permit Nos. 2008-100-C (M-1) and (M-2) PSD, did not incorporate these increases. With the EPA Consent Decree imposing stricter limits on NO_X, later permitting evaluations also do not bring any increases into consideration. The maximum production of Nitric Acid Plants #1 and #4, the only of the three plants that have operated, was 26,354.38 tons 12-month rolling cumulative through June 2017 for Plant #1, and 72,992.27 tons 12-month rolling cumulative through March of 2017 for Plant #4. This is only 30% and 50% respectively of the maximum capacities of these two plants. Concerning the hourly and annual CO limits established for the fumeabators, they were considered in the issuance of Permit 2008-100-C (M-1) and it was requested to revert to the previous levels. Concerning the revision for PM, the revision to 0.11 lbs/hour is a decrease from 0.2 lbs/hour. Finally, the revision made to the compliance demonstration for the carbon dioxide vent was to clarify the math analysis and is not an increase in emissions or a relaxation of a limit.

Permit Application No. 2008-100-TV (M-3), received June 15, 2012:

This application was submitted to modify Ammonia Plant #4, replacing the existing six-bottle design ammonia converter equipped with electric heating by a one-bottle converter equipped with a natural gas fired heater. Since the Title V operating permit had not been issued, this permit application was to be numbered as a construction permit, Permit No. 2008-100-C (M-3). A proposed permit was drafted and ready to be reviewed by EPA (US Environmental Protection Agency), when DEQ decided to place all permitting activity on hold pending resolution of compliance issues. The following analysis was offered by PCC and was included in the draft permit.

The application states that the modification is intended to increase the overall annual utilization rate at Ammonia Plant #4 by reducing the amount of maintenance related downtime associated with operation of the existing ammonia converter system. The existing system is capable of meeting daily limits of 770 tons ammonia production but PCC wants to increase the reliability, i.e., decrease the amount of downtime. Further, there are other restrictions (equipment components) that control the overall production capacity such that the new converter does not increase short term capacity. Ammonia production is limited by syngas production, which is in turn limited by compressed air feeding the process. PCC is not proposing an increase in permit limits. The potentially affected existing sources include:

Ammonia Plant #4 - Primary Reformer	EU ID 101
Ammonia Plant #4 - Condensate Steam Flash Drum	EU ID 102
Ammonia Plant #4 - Carbon Dioxide Vents	EU IDs 501a, 501b, and 501c

This modification will add an additional combustion source:

Ammonia Plant #4 - Ammonia Converter Startup Heater	EU ID 107

<u>Consideration Of Major Modification (Significant Emissions Increase)</u>

In determining whether the proposed work was a major modification, the two criteria comprising the definition of major modification were considered, i.e., whether there is both:

1) a significant increase in emissions; and,

2) a net significant increase in emissions.

In determining Step 1), any additional associated emissions resulting from debottlenecking or increasing the capacity of a process, as well as aggregation of separate permitted projects must be considered.

<u>Associated Emissions</u>

Ammonia Plant #4 was one of a group of separate chemical manufacturing processes, including ammonia, urea, nitric acid, and ammonia nitrate that was first permitted to operate under PCC, all of which underwent a complete PSD analysis including air dispersion modelling and BACT. After a burner replacement in the Primary Reformer of Ammonia Plant #4, this same group of sources was re-permitted under Permit 2008-100-C (M-1) PSD, which again underwent a complete PSD analysis. The following table is a list of processes and emissions units permitted under Permit Nos. 2008-100-C PSD and (M-1) PSD.

Startup Dates for Emissions Units Permitted under 2008-100-C PSD and (M-1) PSD

Emissions Unit	**Startup Date**
Ammonia Plant #4	
225 MMBtu/hr Ammonia Plant #4 Primary Reformer	December 11, 2009
Replacement of first 132 burners	July 2009
Replacement of second 132 burners	September 2010
Ammonia Plant #4 Condensate Steam Flash Drum	December 11, 2009
Urea Plant #2	
Urea Plant #2	October 9, 2009
Nitric Acid Plants	
Nitric Acid Plant #1 - Fumeabator Unit	October 31, 2011
Nitric Acid Plant #3 - Fumeabator Unit	Not Started
Nitric Acid Plant #4 - SCR Unit	October 9, 2009
Nitric Acid Preheaters	
20 MMBtu/hr Nitric Acid Preheater #1	October 31, 2011
20 MMBtu/hr Nitric Acid Preheater #3	Not Started
20 MMBtu/hr Nitric Acid Preheater #4	October 9, 2009
Carbon Dioxide Vent	
Carbon Dioxide Vent (501a - aka, CO_2 Tower Vent)	December 11, 2009
Ammonium Nitrate Plants	
Ammonium Nitrate Plant #1 Neutralizer Vent	Not Started
Ammonium Nitrate Plant #2 Neutralizer Vent	October 9, 2009
Granulator Scrubbers	
Granulator Scrubber #1	Not Started
Granulator Scrubber #2	Not Started
Granulator Scrubber #3	Not Started
Boilers	
53 MMBtu/hr Boiler #1	October 9, 2009
80 MMBtu/hr Boiler #2	October 9, 2009
Cooling Towers	
Cooling Tower #1	October 9, 2009
Cooling Tower #2	October 9, 2009
Storage Tanks	October 9, 2009

The applicant states that no increases in process throughputs or permitted emission rates will occur as a result of the proposed work, therefore there are no additional emissions associated with the proposed modification. The group of equipment associated with this project is essentially a standalone operation in that it has no input or output to other processes except as described herein: Un-scrubbed purge gas from Ammonia Plant #4 can be used as fuel gas for the fumeabator units at Nitric Acid Plants #1 and #3. (This will no longer be the case after the new controls required under the EPA Consent Decree are installed.) CO_2 from the Ammonia Plant #4 is fed to the CO_2 Plant; and CO_2 and ammonia from the Ammonia Plant #4 are fed to the Urea Plants. NH_3 is not regulated at this time, and CO_2 is not evaluated for a significant increase unless a significant increase in a primary criteria pollutant triggers a PSD analysis.

As further justification that a baseline analysis is not required to determine whether associated emissions have occurred, PCC submits that in determining whether a net significant increase has occurred, EPA guidance states that an emissions increase or decrease already considered in a source's PSD permit (state or federal) cannot be considered a contemporaneous increase or decrease since the increase or decrease was relied upon for the purpose of issuing the permit. This guidance is supported under 40 CFR 52.21(b)(3). The following table illustrates a chronology of permitting actions that were recently completed or in process at the time of application submittal for this project.

Permit Number	Application Received	Permit Issued	Permit Action Comment
2008-100-C PSD	3/27/2008	2/23/2009	Original PSD construction permit to re-start portions of a completely out-of-service facility.
2008-100-TV	7/7/2010	Pending	Application to operate. Application No. 2008-100-TV was submitted for operation of the facility, as it was constructed under Permit No. 2008-100-C PSD. It was placed on hold pending evaluation of the other applications and necessary updates to incorporate those permitting actions.
2008-100-C (M-1) PSD	12/20/2010	7/17/2012	PSD Construction Permit to modify primary reformer burners and increase NO_X limit.
2008-100-C (M-2) PSD	4/6/2011	5/2/2012	PSD Construction permit to re-start additional out-of-service processes.
2008-100-C (M-3)	6/15/2012	Pending	Application to replace a six-bottle system w/electric heat starter by a one-bottle system w/gas heat starter.

Ammonia Plant #4 and the group of emissions units that could be affected by modifications to Ammonia Plant #4 were all permitted under Permit No. 2008-100-C PSD, issued February 23, 2009, and again under permit No. 2008-100-C (M-1) PSD issued July 17, 2012. The application for this ammonia converter project, Permit No. 2008-100-TV (M-3), was submitted on June 15, 2012. Any increases or decreases in emissions from sources in Ammonia Plant #4 and its associated processes that have already been considered in the issuance of Permit No. 2008-100-C PSD, would not have been considered a contemporaneous increase because they would have already been considered in the issuance of that PSD permit. By the same analogy, if PCC had submitted the application for the (M-3) permit after issuance of Permit No 2008-100-C (M-1) PSD, this same exclusion would have applied. Thus, in determining whether a net significant increase in emissions has occurred in step 2) above, the only increase is the emissions added by the new ammonia converter startup heater. Thus, the baseline analysis reduces to PTE of the new ammonia converter heater.

The next table illustrates emissions calculations for the Ammonia Plant #4 – Ammonia Converter Startup Heater, supplied with the application for this permit. These are also the PTE, calculated using the maximum heat input rating of 22.08 MMBtu/hr, emission factors from AP-42 (7/98), Tables 1.4-1 and 1.4-2 and operating hours of 8,760. Note that this is a very conservatively high calculation, as the startup heater is only used when restarting the ammonia plant and to heat the converter catalyst to light-off temperature.

Ammonia Plant #4 – Ammonia Converter Startup Heater

Pollutant	Emissions Factor	Emissions		Significance Levels
	Lb/MMSCF	Lbs/hr	TPY	TPY
CO	84	1.82	7.96	100
NO_X	100	2.16	9.48	40
PM	7.6	0.16	0.72	20
PM_{10}	7.6	0.16	0.72	15
$PM_{2.5}$	7.6	0.16	0.72	10(1)
SO_2	1.5	0.03	0.14	40
VOC	5.5	0.12	0.52	40(2)

(1) or the significance level of SO_2 or NO_X unless demonstrated not to be a PM2.5 precursor under the definition of "regulated NSR pollutant".
(2) or the significance level of NO_X.

The sum of the associated emission changes of Ammonia Plant #4 (no increases) and the emissions of the startup heater are less than PSD significance levels, therefore a significant increase has not occurred as a result of the addition of the startup heater and considering potential associated emissions project.

Aggregation Analysis

Finally, in evaluating Step 1) to determine whether a significant emissions increase will occur, aggregation of separate permitted projects and any additional associated emissions resulting from those projects must be considered.

EPA requires that separate permitting projects be evaluated to determine whether they should be combined into a single application for PSD applicability and PSD BACT analysis on a case by case basis in accordance with 40 CFR 52.21(b)(6) and applicable policies and other determinations. PCC has submitted justification concerning the rationale why project aggregation is not applicable. For purposes of this permit issuance, DEQ is not addressing aggregation because any other emissions unit that could be aggregated, if it applied, is already permitted under a PSD permit.

Permit Application No. 2008-100-TV (M-4), received March 25, 2013:

This application was submitted for a rental boiler and alternate operating scenario. The application was submitted as a Tier I on the basis that a significant increase in emissions is not occurring that would trigger a major modification under OAC 252:100-30(b), nor is any other criteria triggered under OAC 252:100-8-7.2(b) that would trigger a significant modification.

Consideration of Major Modification (Significant Emissions Increase)

PCC stated that the rental boiler would not debottleneck or increase the capacity of any affected sources since its only purpose was to be used as a standby boiler to replace unused existing boiler capacity during downtime and maintenance. Two existing boilers are used to support startup (warm-up) at the various process plants and other process needs which include for example, after start-up, steam supply is still needed in the AN Plants, Urea Plants, etc. Operation of the boilers does not change much from startup to normal operation, that is, natural gas usage at the boilers is not significantly reduced after startup. An enforceable limit was requested for the boiler, but not to prevent a significant increase.

As explained above in the evaluation of the ammonia converter replacement project, a baseline analysis for potentially affected sources is not required if those sources are already permitted under a PSD permit and there are no debottlenecking or increases in capacity. Therefore the analysis reduces to a PTE of the boiler and a zero baseline. Although permitted emissions were to be based on 4,380 annual hours of operation, this PTE analysis is based on 8,760 hours to demonstrate that an enforceable limit was not needed on hours of operation for the new boiler. Note that the boiler uses low-NO_X burners with an emissions factor for NO_X of 50 lbs-NO_X/10^6-scf, which is lower than the factor for CO. Also, these calculations do not take into account a reduction in emissions from the primary boilers during their downtime. The following emissions calculations, repeated from the emissions section above, are the PTE.

Boiler #3, EU ID 803 (100 MMBtu/hr)

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	8.1	35.4
NO_X	50.0	lbs/MMscf	AP-42; Table 1.4-1	4.9	21.1
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.8	3.3
PM_{10}	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.8	3.3
$PM_{2.5}$	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.8	3.3
SO_2	0.6	lbs/MMscf	AP-42; Table 1.4-2	0.1	0.3
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	0.6	2.4
Formaldehyde	0.075	lbs/MMscf	AP-42; Table 1.4-3	0.1	0.1

Associated Emissions

Based on the statements above, PCC does not anticipate any associated emissions resulting from the Boiler #3 installation.

Aggregation Analysis

EPA requires that separate permitting projects be evaluated to determine whether they should be combined into a single application for PSD applicability and PSD BACT analysis on a case by case basis in accordance with 40 CFR 52.21(b)(6) and applicable policies and other determinations. PCC has submitted justification concerning the rationale why project aggregation is not applicable, specifically related to the following points: 1) PSD and BACT was already performed for all potentially affected sources and the boiler and preceding projects are unrelated; 2) Separate planning cycles; 3) Separate financing; and Expected production rates. Therefore this project for Boiler #3 will not be aggregated with the project under Permit Application No. 2008-100-TV (M-3) to replace the ammonia converter and heater based on project separation. Any other emissions unit that could be aggregated, if it applied, is already permitted under a PSD permit.

Amendment to Permit Application No. 2008-100-TV (M-4), received May 28, 2013:

This application was submitted as a Tier I minor permit modification. Emissions changes were due to corrections and accounting for existing emissions points that were not included in previous permits. The increases in total facility-wide emissions are illustrated by the tables below.

Consideration of Major Modification (Significant Emissions Increase)

The only pollutants having a significant increase based on the changes described for this application and project (as such) were PM and $PM_{2.5}$, but that is because quantification of these two categories of PM could not be included in previous permits due to the lack of information on accurate speciation in AP-42, Chapter 13.4. As a result, former emission limits were based only on PM_{10}. It is the sum of these new entries for PM and $PM_{2.5}$, corrected from zero, that are significant, not new emissions or emissions increases from the individual sources. Also, note that $PM_{2.5}$ is high because it is assumed equal to PM. However, for the emissions units showing new PM and $PM_{2.5}$ emissions, there was no physical change causing the increase and thus no modification. If the revision to include startup vents were considered to be a physical change on the basis that they were not addressed in previous permits, then the second criteria for a major modification is not met, i.e. there is not a net significant increase in emissions, thus the request for a minor modification to include all the changes and emissions. The application is therefore a minor modification.

The following tables illustrate the change in emissions from the (M-3) application and this amendment to the (M-4) application. The (M-3) application is, as indicated in the table title, represented by emissions permitted under Permit No. 2008-100-C (M-2) PSD (the most recently issued permit) amended for the emissions added by the application for the Ammonia Plant #4 Converter Startup Heater. The emissions requested under this amendment to Permit 2008-100-TV (M-4) are represented by the emissions permitted under Permit No. 2008-100-C (M-2) PSD and the additional emissions added for Boiler #3 under Application No. 2008-100-TV (M-4) and also the changes requested in this amendment. Note that Ammonia Plants #1 and #3, which were expected to be in service at the time of this application, have been sold and removed from the plant.

Permit No. 2008-100-TV (M-3) [Permit No. 2008-100-C (M-2) PSD w/ Startup Heater]

Facility-Wide Summary EUG/EU	**NO_X (TPY)**	**CO (TPY)**	**PM_{10} (TPY)**	**VOC (TPY)**	**SO_2 (TPY)**	**NH_3 (TPY)**
EUG No. 1 – Ammonia Plants						
Ammonia Plant #4 – 225 MMBtu/hr Primary Reformer*	52.23*	81.2	5.6	5.4	2.9	
Ammonia Plant #4 Condensate Steam Flash Drum				45.6		23.7
Ammonia Plant #1 – 60 MMBtu/hr Primary Reformer	22.4	21.7	1.5	1.5	0.6	
Ammonia Plant #1 – 28 MMBtu/hr Waste Heat Boiler Auxiliary Heater	6.2	10.3	0.7	0.7	0.2	
Ammonia Plant #3 – 64 MMBtu/hr Primary Reformer	23.9	23.1	1.6	1.5	0.6	
Ammonia Plant #3 – 28 MMBtu/hr Waste Heat Boiler Auxiliary Heater	6.2	10.3	0.7	0.7	0.2	
Ammonia Plants #1 and #3 - Condensate Steam Flash Drum				19.9		11.7
Ammonia Plant #4 Converter startup heater 22.08 MMBtu/hr	9.48	7.96	0.72	0.72	0.72	0.52
EUG No. 3 – Nitric Acid Plants						
Plant #1 – EU Point 301	58.4	14.6				
Plant #3 – EU Point 302	43.8	11.0				
Plant #4 – EU Point 303	159.7					3.8
EUG No. 4 – Nitric Acid Heaters						
Plant #1, #3, and #4 – Preheaters	12.9	21.7	1.5	1.5	0.4	
EUG No. 5 – Carbon Dioxide Vents						
Ammonia Plant #4 to EU ID #s: 501a, 501b, 501c		17.6				
Ammonia Plant #3 to EU ID #s: 501b, 502		2.5				
Ammonia Plant #1 to EU ID #s: 501b, 501c		2.5				
EUG No. 6 - Ammonium Nitrate Plants						
Plant #1 and Plant #2			0.6			0.6
EUG No. 7 - Granulator Scrubbers						
Granulator Scrubber #1, #2, and #3			8.8			30.8
EUG No. 8 - Boilers						
Boiler #1	11.4	19.2	1.3	1.3	0.4	
Boiler #2	17.2	28.9	2.0	1.9	0.6	
EUG No. 9 - Cooling Towers						
Cooling Tower No. 1			8.0			
Cooling Tower No. 2			8.1			
EUG No. 10 – Fugitives						121.5
Totals	**423.78**	**272.56**	**41.12**	**80.72**	**6.62**	**192.62**

***** Limit for NO_X from Permit No. 2008-100-C PSD.

Permit Application No. 2008-100-TV (M-4) and Amendments

Facility-Wide Summary **EUG/EU**	**NO_X (TPY)**	**CO (TPY)**	**PM (TPY)**	**PM_{10} (TPY)**	**$PM_{2.5}$ (TPY)**	**VOC (TPY)**	**SO_2 (TPY)**	**NH_3 (TPY)**
EUG No. 1 – Ammonia Plants								
Ammonia Plant #4 – 225 MMBtu/hr Primary Reformer*	52.23*	81.2	7.4	7.4	7.4	5.4	2.9	
Ammonia Plant #1 Startup Vent –EU110a		5.5						
EU110b		0.2						
EU110c		0						
Ammonia Plant #4 Condensate Steam Flash Drum						45.6		23.7
Ammonia Plant #1 – 60 MMBtu/hr Primary Reformer	22.4	21.7	2	2	2	1.5	0.6	
Ammonia Plant #1 – 28 MMBtu/hr Waste Heat Boiler Auxiliary Heater	6.2	10.3	1	1	1	0.7	0.2	
Ammonia Plant #1 Startup Vent – EU108a		0.8						
EU108b		0.1						
EU108c		0.1						
Ammonia Plant #3 – 64 MMBtu/hr Primary Reformer	23.9	23.1	2.1	2.1	2.1	1.5	0.6	
Ammonia Plant #3 – 28 MMBtu/hr Waste Heat Boiler Auxiliary Heater	6.2	10.3	1	1	1	0.7	0.2	
Ammonia Plant #1 Startup Vent – EU109a		0.8						
EU109b		0.1						
EU109c		0.1						
Ammonia Plants #1 and #3 - Condensate Steam Flash Drum						19.9		11.7
Ammonia Plant #4 Converter startup heater 22.08 MMBtu/hr	9.48	7.96	0.72	0.72	0.72	0.52	0.14	
EUG No. 3 – Nitric Acid Plants								
Plant #1 – EU Point 301	58.4	56.2						65.0
Plant #3 – EU Point 302	43.8	42.2						65.0
Plant #4 – EU Point 303	159.7							3.8
EUG No. 4 – Nitric Acid Heaters								
Plant #1, #3, and #4 – Preheaters	12.9	21.7	2	2	2	1.5	0.4	
EUG No. 5 – Carbon Dioxide Vents								
Ammonia Plant #4 to EU ID #s: 501a, 501b, 501c		17.6						
Ammonia Plant #3 to EU ID #s:		2.5						

Facility-Wide Summary **EUG/EU**	**NO_X (TPY)**	**CO (TPY)**	**PM (TPY)**	**PM_{10} (TPY)**	**$PM_{2.5}$ (TPY)**	**VOC (TPY)**	**SO_2 (TPY)**	**NH_3 (TPY)**
501b, 502								
Ammonia Plant #1 to EU ID #s: 501b, 501c		2.5						
Carbon Dioxide Vent – Ammonia Plant #1 EU ID 501b and 501c						0.89		2.6
Carbon Dioxide Vent – Ammonia Plant #3 (EU ID 501b and 502)						0.89		2.6
Carbon Dioxide Vent – Ammonia Plant #4 (EU ID 501a and 501b)						6.2		18.0
EUG No. 6 - Ammonium Nitrate Plants								
Plant #1 and Plant #2			0.6	0.6	0.6			0.6
EUG No. 7 - Granulator Scrubbers								
Granulator Scrubber #1, #2, and #3			8.8	8.8	8.8			30.8
EUG No. 8 - Boilers								
Boiler #1	11.4	19.2	1.8	1.8	1.8	1.3	0.16	
Boiler #2	17.2	28.9	2.0	2.0	2.0	1.9	0.21	
Boiler #3 Rental Boiler	10.8	18.1	1.7	1.7	1.7	1.2	0.14	
EUG No. 9 - Cooling Towers								
Cooling Tower No. 1			11.4	8.0	0.03			
Cooling Tower No. 2			11.5	8.1	0.03			
EUG No. 10 – Fugitives								121.5
Totals	**434.61**	**372.16**	**54.02**	**47.22**	**31.18**	**89.7**	**5.55**	**345.3**

***** Limit for NO_X from Permit No. 2008-100-C PSD.

	NO_X (TPY)	**CO (TPY)**	**PM (TPY)**	**PM_{10} (TPY)**	**$PM_{2.5}$ (TPY)**	**VOC (TPY)**	**SO_2 (TPY)**	**NH_3 (TPY)**
Permit Application No. 2008-100-TV (M-4)	434.6	372.2	54.1	47.3	31.2	89.7	5.6	345.3
Permit No. 2008-100-TV (M-3)	423.8	272.6	NA	41.2	NA	80.7	6.6	192.6
Increase	10.8	99.6	54.1	6.1	31.2	9.0	(1.0)	152.7

NA – Not Accounted For

Associated Emissions

Associated emissions are not a consideration when there are no physical changes or modifications.

Aggregation Analysis

If emissions were aggregated for all permitting actions (in this case applications) for a 3-year look-back, this would pull in the applications for the Ammonia Plant #4 Startup Heater replacement and the Boiler #3 Rental Boiler. Since this is an amendment to the Boiler #3 permit application, Boiler

#3 emissions are already counted in the analysis.

The following table illustrates the aggregation of emissions for each application subsequent to Permit No. 2008-100-C (M-2) (PSD) and the increase in emissions. Since the table above for Permit Application No. 2008-100-TV (M-4) with Amendments includes both the startup heater and Boiler #3, emissions for those two projects plus the amendments are already aggregated in that table and the analysis for the increase is the difference between those total emissions and the permitted emissions under 2008-100-C (M-2) PSD.

	NO_X (TPY)	CO (TPY)	PM (TPY)	PM_{10} (TPY)	$PM_{2.5}$ (TPY)	VOC (TPY)
Permit No. 2008-100-TV (M-4) Rental Boiler #3 and Amendments	501.3	372.2	51.7	47.3	51.7	89.6
Subtotal of 3-Year Look-Back Projects	**501.3**	**372.2**	**51.7**	**47.3**	**51.7**	**89.6**
Permit No. 2008-100-C (M-2) PSD	480.4	264.7	NA	41.2	NA	80.0
Increase over Permit No. 2008-100-C (M-2) PSD	**20.9**	**107.5**	**NA**	**6.1**	**NA**	**9.6**

Again, as discussed above and for the same reasons, PM and $PM_{2.5}$ emissions increases are above the significance increase levels, but now CO is also above the significance level if the projects must be aggregated, primarily as a result of the corrections under this application which account for 80 tons of CO, mostly from the revisions to include existing startup/shutdown vents for the ammonia plants. However, it should be noted that a later decision to leave Ammonia Plants #1 and #3 out of service reduces the CO emissions increase by 72.2 tons per year, thus below a significant increase. Air dispersion modeling for NO_X and CO was provided by the applicant in an application dated April 21, 2015, particularly more to support the results of the Re-BACT analysis and construction permit required under Permit Nos. 2008-100-C (M-1) & (M-2) PSD for additional NO_X emissions from the Ammonia Plant #1, #3, and #4 Primary Reformers and also more recently the list of changes which included additional unaccounted CO emissions from startup/shutdown vents. Subsequent revised modeling submitted in May 2017 resulted in the decision to take Ammonia Plants #1 and #3 out of service.

Permit Application No. 2008-100-TV (M-5) received December 18, 2013:

PCC submitted that the total increases in emissions from the project to upgrade Cooling Tower #2 are PM emissions from the tower. The increases in emissions are 2.95 TPY each of PM, PM_{10} and $PM_{2.5}$, all below their respective significance level. If treating the increase in PM and $PM_{2.5}$ from the previous permits as corrections, then aggregating these emissions would result in increases of 2.95 TPY of PM and $PM_{2.5}$ and 12.85 TPY of PM_{10}, all below the significance levels. Recall from the previous discussion that the cooling tower upgrade was done to increase cooling capacity at the urea plant, which has no regulated pollutants. Other processes having regulated pollutants are not affected by the cooling tower upgrade. Therefore there are no associated emissions to consider in evaluating whether there is a significant increase.

Amendment to Permit Application No. 2008-100-TV and all subsequent amendments related to 2008-100-TV, received April 21, 2015:

This was an amendment to update Permit No. 2008-100-TV and all subsequent updates, to include all applications and amendments submitted to date. PCC requested to increase the NO_X limits for the Ammonia Plant #4 Primary Reformer from the original permit limit of 52.23 TPY to 75.34 TPY. This was based on early conclusions from the trial BACT study which was finished in early 2015. At the time, the thought train was to develop a ton/year limit considering the amount of time the plant was under normal operations versus startup and shutdown operations. The plant was believed to be capable of normal operation about 90% of the year. The limit of 75.34 TPY was then developed using the mean value emissions factor of 0.0748 lb/MMBtu for normal operation, a statistically derived value based on test data. Using that emissions factor and the heat input rating of 225 MMBtu/hr, annual emissions based on 8,760 hours per year were calculated to be 66.34 TPY-NO_X. The remaining estimated 10% of the year when emissions were considered to be startup and shutdown related, the mean value of the startup and shutdown data (i.e., 0.0913 lb/MMBtu) were calculated to be 9.0 TPY-NO_X. The sum of the two (66.34 ton/year + 9.0 ton/year) results in 78.34 ton/year. Note that both the 90% normal ton/year estimate and 10% startup and shutdown ton/year estimate used the old 225 MMBtu/hour maximum heat input value, and not the requested increase to 300 MMBtu/hr. This however, is accounted for in a subsequent submittal as discussed later.

The following tables illustrate emissions before and after the list of changes requested to the facility emissions.

Before Emissions

Permit Application No. 2008-100-TV (M-4) and Amendments

Facility-Wide Summary **EUG/EU**	**NO_X (TPY)**	**CO (TPY)**	**PM (TPY)**	**PM_{10} (TPY)**	**$PM_{2.5}$ (TPY)**	**VOC (TPY)**	**SO_2 (TPY)**	**NH_3 (TPY)**
EUG No. 1 – Ammonia Plants								
Ammonia Plant #4 – 225 MMBtu/hr Primary Reformer*	52.23*	81.2	7.4	7.4	7.4	5.4	2.9	
Ammonia Plant #1 Startup Vent –EU110a		5.5						
EU110b		0.2						
EU110c		0						
Ammonia Plant #4 Condensate Steam Flash Drum						45.6		23.7
Ammonia Plant #1 – 60 MMBtu/hr Primary Reformer	22.4	21.7	2	2	2	1.5	0.6	
Ammonia Plant #1 – 28 MMBtu/hr Waste Heat Boiler Auxiliary Heater	6.2	10.3	1	1	1	0.7	0.2	
Ammonia Plant #1 Startup Vent – EU108a		0.8						
EU108b		0.1						

Facility-Wide Summary **EUG/EU**	**NO_X (TPY)**	**CO (TPY)**	**PM (TPY)**	**PM_{10} (TPY)**	**$PM_{2.5}$ (TPY)**	**VOC (TPY)**	**SO_2 (TPY)**	**NH_3 (TPY)**
EU108c		0.1						
Ammonia Plant #3 – 64 MMBtu/hr Primary Reformer	23.9	23.1	2.1	2.1	2.1	1.5	0.6	
Ammonia Plant #3 – 28 MMBtu/hr Waste Heat Boiler Auxiliary Heater	6.2	10.3	1	1	1	0.7	0.2	
Ammonia Plant #1 Startup Vent – EU109a		0.8						
EU109b		0.1						
EU109c		0.1						
Ammonia Plants #1 and #3 - Condensate Steam Flash Drum						19.9		11.7
Ammonia Plant #4 Converter startup heater 22.08 MMBtu/hr	9.48	7.96	0.72	0.72	0.72	0.52	0.14	
EUG No. 3 – Nitric Acid Plants								
Plant #1 – EU Point 301	58.4	56.2						65.0
Plant #3 – EU Point 302	43.8	42.2						65.0
Plant #4 – EU Point 303	159.7							3.8
EUG No. 4 – Nitric Acid Heaters								
Plant #1, #3, and #4 – Preheaters	12.9	21.7	2	2	2	1.5	0.4	
EUG No. 5 – Carbon Dioxide Vents								
Ammonia Plant #4 to EU ID #s: 501a, 501b, 501c		17.6						
Ammonia Plant #3 to EU ID #s: 501b, 502		2.5						
Ammonia Plant #1 to EU ID #s: 501b, 501c		2.5						
Carbon Dioxide Vent – Ammonia Plant #1 EU ID 501b and 501c						0.89		2.6
Carbon Dioxide Vent – Ammonia Plant #3 (EU ID 501b and 502)						0.89		2.6
Carbon Dioxide Vent – Ammonia Plant #4 (EU ID 501a and 501b)						6.2		18.0
EUG No. 6 - Ammonium Nitrate Plants								
Plant #1 and Plant #2			0.6	0.6	0.6			0.6
EUG No. 7 - Granulator Scrubbers								
Granulator Scrubber #1, #2, and #3			8.8	8.8	8.8			30.8
EUG No. 8 - Boilers								
Boiler #1	11.4	19.2	1.8	1.8	1.8	1.3	0.16	

Facility-Wide Summary EUG/EU	**NO_X (TPY)**	**CO (TPY)**	**PM (TPY)**	**PM_{10} (TPY)**	**$PM_{2.5}$ (TPY)**	**VOC (TPY)**	**SO_2 (TPY)**	**NH_3 (TPY)**
Boiler #2	17.2	28.9	2.0	2.0	2.0	1.9	0.21	
Boiler #3 Rental Boiler	11.4	19.1	1.7	1.7	1.7	1.1	0.14	
EUG No. 9 - Cooling Towers								
Cooling Tower No. 1			11.4	8.0	0.03			
Cooling Tower No. 2			8.4	5.9	0.02			
EUG No. 10								121.5
Totals	**435.21**	**372.16**	**50.92**	**45.02**	**31.17**	**89.6**	**5.55**	**345.3**

***** Limit for NO_X from Permit No. 2008-100-C PSD.

<u>After Emissions</u>

Amendment to Permit Application No. 2008-100-TV and all subsequent amendments related to 2008-100-TV, received April 21, 2015

Facility-Wide Summary EUG/EU	**NO_X (TPY)**	**CO (TPY)**	**PM (TPY)**	**PM_{10} (TPY)**	**$PM_{2.5}$ (TPY)**	**VOC (TPY)**	**SO_2 (TPY)**	**NH_3 (TPY)**
EUG No. 1 – Ammonia Plants								
Ammonia Plant #4 – 300 MMBtu/hr Primary Reformer*	75.34*	108.2	9.8	9.8	9.8	7.1	2.9	43.78
Ammonia Plant #4 Startup Vent – EU110a		5.5						586.6
EU110b		96.2						
EU110c		0						
Ammonia Plant #4 Condensate Steam Flash Drum						7.34		35.64
Ammonia Plant #1 – 60 MMBtu/hr Primary Reformer	22.4	21.7	2	2	2	1.5	0.6	
Ammonia Plant #1 – 28 MMBtu/hr Waste Heat Boiler Auxiliary Heater	6.2	10.3	1	1	1	0.7	0.2	
Ammonia Plant #4 Converter startup heater	17.18	14.43	1.31	1.31	1.31	0.94	0.16	
Ammonia Plant #1 Startup Vent – EU108a		0.8						
EU108b		0.1						
EU108c		0.1						
Ammonia Plant #3 – 64 MMBtu/hr Primary Reformer	23.9	23.1	2.1	2.1	2.1	1.5	0.6	
Ammonia Plant #3 – 28 MMBtu/hr Waste Heat Boiler Auxiliary Heater	6.2	10.3	1	1	1	0.7	0.2	
Ammonia Plant #1 Startup Vent – EU109a		0.8						
EU109b		0.1						

Facility-Wide Summary **EUG/EU**	**NO_X (TPY)**	**CO (TPY)**	**PM (TPY)**	**PM_{10} (TPY)**	**$PM_{2.5}$ (TPY)**	**VOC (TPY)**	**SO_2 (TPY)**	**NH_3 (TPY)**
EU109c		0.1						
Ammonia Plants #1 and #3 - Condensate Steam Flash Drum						3.61		17.55
EUG No. 3 – Nitric Acid Plants								
Plant #1 – EU Point 301	58.4	56.2						65.0
Plant #3 – EU Point 302	43.8	42.2						65.0
Plant #4 – EU Point 303	159.7							3.8
EUG No. 4 – Nitric Acid Heaters								
Plant #1, #3, and #4 – Preheaters	12.9	21.7	2	2	2	1.5	0.4	
EUG No. 5 – Carbon Dioxide Vents								
Ammonia Plant #4 to EU ID #s: 501a, 501b, 501c		17.6						
Ammonia Plant #3 to EU ID #s: 501b, 502		2.5						
Ammonia Plant #1 to EU ID #s: 501b, 501c		2.5						
Carbon Dioxide Vent – Ammonia Plant #1 EU ID 501b and 501c						0.89		2.6
Carbon Dioxide Vent – Ammonia Plant #3 (EU ID 501b and 502)						0.89		2.6
Carbon Dioxide Vent – Ammonia Plant #4 (EU ID 501a, 501b, and 501c)						6.2		18.0
EUG No. 6 - Ammonium Nitrate Plants								
Plant #1 and Plant #2			0.6	0.6	0.6			0.6
EUG No. 7 - Granulator Scrubbers								
Granulator Scrubber #1, #2, and #3			8.8	8.8	8.8			30.8
EUG No. 8 - Boilers								
Boiler #1	11.4	19.2	1.8	1.8	1.8	1.3	0.16	
Boiler #2	17.2	28.9	2.0	2.0	2.0	1.9	0.21	
Boiler #3 Rental Boiler	10.5	17.7	1.6	1.6	1.6	1.2	0.1	
EUG No. 9 - Cooling Towers								
Cooling Tower No. 1			11.4	8.0	0.03			
Cooling Tower No. 2			11.5	8.1	0.03			
EUG No. 10								121.5
Totals	**465.12**	**500.23**	**56.91**	**50.11**	**34.07**	**37.27**	**5.53**	**993.47**

* Requested enforceable limit.

The following summary illustrates the increase in emissions without taking into account the changes in natural gas combustion emissions factors due to higher heating value of natural gas.

	NO_X (TPY)	CO (TPY)	PM (TPY)	PM_{10} (TPY)	$PM_{2.5}$ (TPY)	VOC (TPY)	SO_2 (TPY)	NH_3 (TPY)
Amendment to Permit Application No. 2008-100-TV and all subsequent amendments related to 2008-100-TV, received April 21, 2015	465.12	500.2	51.0	45.1	31.2	37.3	5.5	993.5
Permit Application No. 2008-100-C (M-4) and Amendments	435.21	372.2	57.0	50.2	34.1	89.6	5.6	345.3
Increases in Emissions	**29.91**	**128.0**	**(6.0)**	**(5.1)**	**(2.9)**	**(52.3)**	**(0.1)**	**648.2**

Assuming the fuel heat input correction from 1,020 Btu/scf to 1,040 results in approximately a 2% reduction in the emissions factors for combustion source emissions, the following table listing combustion sources illustrates the approximate decreases in NO_X and CO. The reduction in CO of 2.0 TPY is not enough to avoid a significant increase in emissions. However, the primary causes of the increase in CO were a correction in the rating of the Primary Reformer from 225 MMBtu/hr to 300 MmBtu/hr (accounting for 27 tons/year) and correction of the Ammonia Plant #4 Startup Vent EU ID 110b (accounting for another 96 tons/year). If considering only the increase in emissions from the primary reformer, there is no significant increase from this amendment alone. As noted above, a reduction in CO of 72.2 tons per year is realized later in the application process by taking Ammonia Plants #1 and #3 out of service in a submittal received May 17, 2016 as an amendment to Permit No. 2008-100-C (M-6). A reduction of 58.7 TPY in permitted NO_X is also realized.

2% Reductions in Combustion Emissions

Combustion Sources	NO_X (TPY)	CO (TPY)	PM (TPY)	PM_{10} (TPY)	$PM_{2.5}$ (TPY)	VOC (TPY)	SO_2 (TPY)
Ammonia Plant #4 Converter startup heater	17.18	14.43	1.31	1.31	1.31	0.94	0.16
Plant #1, #3, and #4 – Preheaters	12.9	21.7	2	2	2	1.5	0.4
Boiler #1	11.4	19.2	1.8	1.8	1.8	1.3	0.16
Boiler #2	17.2	28.9	2.0	2.0	2.0	1.9	0.21
Boiler #3 Rental Boiler	10.5	17.7	1.6	1.6	1.6	1.2	0.1
Total Combustion Emissions	**69.18**	**101.93**	**8.71**	**8.71**	**8.71**	**6.84**	**1.03**
2% Reduction	**1.4**	**2.0**	**0.2**	**0.2**	**0.2**	**0.1**	**<0.1**

On June 22, 2015, DEQ requested new ambient air dispersion modeling. The results of the modeling were submitted to DEQ on January 4, 2016, but did not include increases resulting from the new proposed BACT limits for Primary Reformers #1 and 3 or the Nitric Acid Plant #3. Revised Amended modeling was included in an application amendment submitted on May 17, 2016 that included Boiler #3 emissions and removal of the limit on operating hours as well as confirmation that Ammonia Plants #1 and #3 and also Nitric Acid Plant #3 will remain out of service.

A summary discussion of the modeling will be included later in this memorandum with the BACT analysis.

Permit Application No. 2008-100-C (M-6) PSD received April 21, 2015:

Permit Nos. 2008-100-C (M-1) PSD and 2008-100-C (M-2) PSD included requirements to conduct BACT studies for the primary reformers for Ammonia Plant #1, #3 and #4 and to submit an application. The application was to include the final BACT analysis and BACT limit, and an analysis indicating if any other pollutant is affected by this final determination. The application was submitted on April 21, 2015. The BACT analysis report and modeling report for this application was dated December 30, 2015 and received January 4, 2016. The report stated in the overview that Ammonia Plants #1 and #3, as well as Nitric Acid Plant #3, were taken out of service and therefore not included in the modeling analysis. Emissions from Boiler #3 had also been left out of the modeling. Because this would exclude those sources from being permitted, PCC submitted revised modeling in a report dated May 17, 2016, however, to include Boiler #3 but conceded that Ammonia Plants #1 and #3, and Nitric Acid Plant #3 would remain idle, and that Nitric Acid Plant #3 would be used for backup service when one of the other two nitric acid plants was not in operation.

The modeling report was reviewed and approved by DEQ personnel with expertise in modeling. The following table illustrates the hourly emissions rates to be permitted by this permit that were used in the modeling analysis.

EU ID	EU Name/Model	CO (lbs/hr)	NO_X (lbs/hr)
	Ammonia Plants		
101	Ammonia Plant #4 300 MMBtu/hr	24.23	49.74
102	Ammonia Plant #4 Condensate Steam Flash Drum		
107	Ammonia Plant #4 – 40 MMBtu/hr Converter Startup Heater	3.23	**
110a	Ammonia Plant #4 Startup Vent	241.90	0.04
110b	Ammonia Plant #4 Startup Vent		
110c	Ammonia Plant #4 Startup Vent		
	Nitric Acid Plants		
301	Nitric Acid Plant #1 - Fumeabator Unit	15.40	16.0/30.00
303	Nitric Acid Plant #4 - SCR Unit	*	41.8/50.00
	Nitric Acid Plants Preheaters		
401	Nitric Acid Preheater #1 - 20 MMBtu/hr	1.62	**
402	Nitric Acid Preheater #3 - 20 MMBtu/hr	***	***
403	Nitric Acid Preheater #4 - 20 MMBtu/hr	1.62	**
	Carbon Dioxide Vents		
	Ammonia Plant #4 to EU ID #s: 501a	4.01	0.00
	Carbon Dioxide Plant Vent EU ID #s 501b	5.21	0.00
	Boilers		
801	53 MMBtu/hr Boiler #1	4.28	2.55
802	80 MMBtu/hr Boiler #2	6.46	3.85
803	100 MMBtu/hr Boiler #3	8.08	4.81
NA	**Insignificant Emissions Sources**		
1001	0.0152 MMBtu/hr Ammonia Storage Flare Pilot	0.00123	0.00073

* Controlled by SCR.
** Intermittent sources not included in 1-hr NO_X modeling.
*** Out-of-service.

Amendment to Permit Application No. 2008-100-C (M-6) PSD Re-BACT Application Received December 30, 2015.

A revised BACT Analysis report and air dispersion modeling for Ammonia Pant #4 Primary Reformer included: Updated ambient impact analysis for nitrous oxide (NO_X) emissions from the Ammonia Plant #4 Primary Reformer (EU ID 101) reflecting the proposed BACT limit revision for startup, shutdown, malfunction, and malfunction related scenarios; Updated ambient impact analysis for carbon monoxide (CO) emissions from the Ammonia Plant #4 Startup/Shutdown Vents (EU ID 110); Updated BACT analysis for the Ammonia Plant #4 Primary Reformer (EU ID 101) addressing the proposed NO_X BACT limit revision for startup, shutdown, malfunction, and malfunction related scenarios; and Updated BACT analysis for the Ammonia Plant #4 Startup/Shutdown Vents (EU ID 110) addressing the proposed CO BACT limit addition for this source. This is an amendment but would likely have been a Tier I modification if considered as a separate application. Note that while this application amendment proposed limits for malfunction and malfunction related scenarios, the permit does not include limits for those scenarios. The omission of a BACT limit for these scenarios is consistent with the PCC and ODEQ agreement reached during a conference call on 8/21/18 that excess emissions due to malfunction and malfunction related events (i.e., those meeting the regulatory definition of malfunction) will be reported consistent with the regulatory requirements in Oklahoma 252:100-9.

Amendment to Permit Application No. 2008-100-C (M-6) PSD Re-BACT Application Received May 17, 2016.

As discussed above, an amendment was submitted to: Update air dispersion modeling for NO_X and CO to include Boiler #3; Confirm that Ammonia Plants #1 and #3 as well as Nitric Acid Plant #3 will remain out of service; and Remove hours of operation for Boiler #3. This application will be processed as an amendment to the application submitted for Boiler #3, Permit No. 2008-100-TV (M-3). However, if considered a separate application it would likely have been only a Tier I modification.

Permit Application No. 2008-100-C (M-7) received July 6, 2016, to incorporate requirements from an EPA Consent Decree and to make the following revisions:

Change NO_X emissions limits for the nitric acid plants to comply with the EPA Consent Decree and add requirements for NSPS A and G; Additional requirements and statements as needed to incorporate the CD and incorporate Appendix C (CEMS Plan) of the CD; Remove CO limits for Nitric Acid Plants #1 and #3 as the change from NSCR to SCR will eliminate CO emissions resulting from the combustion of methane used in the NSCR (fumeabators); Revise ammonia limits for Nitric Acid Plants #1 and #3 to account for ammonia slip emissions resulting from the change from NSCR to SCR; Add ammonia emissions limits for Nitric Acid Plant #4 Startup Vent; and Since PCC was not able to pass the air dispersion modeling analysis when including Nitric Acid Plant #3, PCC requests a permit condition allowing it to be operated only during times when either Nitric Acid Plant #1 or Nitric Acid Plant #4 is shut down. The incorporation of the EPA Consent Decree alone requires a construction permit, normally done as a Tier I. However, other minor changes that can't be done as administrative changes would have required a Tier I modification. A fee is also required for this application.

Permit Application No. 2008-100-TV (M-8) received April 28, 2017, submitted to make the following changes to the permit:

Most of the revisions in this application involved removal of sources related to emissions units that are being removed. Other than the addition of ammonia emissions, which at this time is not a regulated pollutant, the only change that needs to be evaluated for a potential increase in emissions is the revision of EUG 1 to update the emission calculations at the Ammonia Plant #4 Reformer Stack (EU ID 101) and at the Ammonia Plant#4 Condensate Steam Flash Drum (EU ID 102). PCC requested to increase the NO_X limits for the Ammonia Plant #4 Primary Reformer from 75.34 TPY to 98.3 TPY. The requested limit of 98.3 TPY is still based on a calculated "Mean Value – Normal Operation" value of 0.0748 lbs/MMBTU as determined from the trial BACT study, the maximum heat input rating of the primary reformer of 300 MMBtu/hr, and annual operating hours of 8,760.

This increase in annual emissions is due to the revised 300 MMBtu/hr maximum heat input value, and the 90%/10% allocation for normal and startup and shutdown operations was eliminated. PCC believes the emissions factor had enough contingency if utilized 100% to account for annual emissions, given short term higher fluctuations due to startup and shutdown, that even when using the revised maximum reformer rating of 300 MMBtu/hr and a 100% utilization rate it represents the maximum annual emissions that could occur, and it avoids having to have limits/record keeping requirements to track the number of hours the plant operates under each scenario (i.e., normal operation versus startup and shutdowns).

The increase in NO_X emissions of 23 TPY, when aggregated with the 29.9 TPY increase requested in the April 2015 submittals, is an increase of 52.9 TPY which is a significant increase. However, a reduction in NO_X of 58.7 TPY tons per year was realized in the application process by taking Ammonia Plants #1 and #3 out of service in a submittal received May 17, 2016 as an amendment to Permit No. 2008-100-C (M-6), which would net out of a significant increase. Regardless, a BACT analysis was required due to relaxation of a BACT limit.

Emission factors for the Ammonia Plant #4 Condensate Steam Flash Drum were updated to reflect updated compliance monitoring data. This resulted in an increase in VOC, Methanol, and ammonia from Ammonia Plant #4 but is still an overall decrease when considering removal of the other two plants.

Finally, an NSPS modification is not taking place as there has been no new NSPS triggered by any of the actions described in this application. The applicable NSPS Subpart G was imposed through the EPA Consent Decree.

Application No. 2008-100-TV (M-9) received September 7, 2017 submitted to amend Permit Application No. 2008-100–C (M-7) to:

Remove all sources associated with Nitric Acid Plant #3 from the permit. These sources include Nitric Acid Plant #3 (EU ID 302) and the Nitric Acid Preheater #3 (EU ID 402); Revise EUG 3 to update the maximum design flow rate and the startup and shutdown flow rate at Nitric Acid Plant #1 (EU ID 301) and Nitric Acid Plant #4 (EU ID 303) based on post-consent decree design; Replace the existing fumeabator at Nitric Acid Plant #1 (EU ID 301) with a new non-selective catalytic reduction (NSCR) unit, followed by a new selective catalytic reduction (SCR) unit; Add natural gas emissions associated with the NSCR to Nitric Acid Plant #1 (EU ID 301); Revise EUG 3 to update ammonia slip limits at Nitric Acid Plant #1 (EU ID 301) and Nitric Acid Plant #4 (EU ID 303). Based on removing sources, adding minute amounts of combustion emissions and ammonia emissions, this application would have been considered a Tier I modification.

Amendment received amendment September 15, 2017 which PCC states was originally submitted on July 6, 2016 to amend previous applications including the following changes:

NO_X, NH_3, and $PM/PM_{10}/PM_{2.5}$ are the only pollutants added increased. NO_X is added at 0.01 TPY for the Nitric Acid Plant #4 Startup Vent. NH_3 is not a regulated pollutant. Based on the originally requested permit limits for $PM/PM_{10}/PM_{2.5}$ at the Cooling Towers of 9.1 and 11.45 TPY $PM/PM_{10}/PM_{2.5}$, the requested increases to 12.87 and 18.65 TPY, resulted in an increase of 10.97 TPY $PM/PM_{10}/PM_{2.5}$. These were corrections not related to a modification. The project to add two new vertical turbine pumps to Cooling Tower #2 (EU ID 902) to increase cooling at the Urea Plant, resulted in an increase in throughput and an increase in emission limits from 9.09 ton/yr to 11.45 ton/yr, i.e. 2.36 TPY. This increase aggregated with the later of 10.97, was a total increase of 13.33 TPY $PM/PM_{10}/PM_{2.5}$.

Because those submittals indicated an exceedance of the significance threshold for $PM_{2.5}$, even though the September 15, 2017 submittal only corrected the proposed emission limits to account for site-specific TDS values, PCC has submitted revised calculations for the cooling towers based on guidance published by the New Mexico Environment Department – Air Quality Bureautitled" Technical Memorandum – Calculating TSP, PM-10, and PM-2.5 from Cooling Towers". PCC believes this guidance provides more accurate fraction percentages for PM_{10} and $PM_{2.5}$ than what is presented in AP-42, Chapter 13.4, the former method of calculating emissions. Based on the revised calculations, the analysis above can be rewritten as:

Based on the most current requested permit limits for $PM/PM_{10}/PM_{2.5}$ at Cooling Tower #1 of 11.4, 8.0, and 0.03 TPY $PM/PM_{10}/PM_{2.5}$, respectively, the requested increases to 16.1, 11.3, and 0.04 TPY, respectively, result in increases in $PM/PM_{10}/PM_{2.5}$ of 4.7, 3.3, and 0.01 TPY, respectively.

Based on the most current requested permit limits for $PM/PM_{10}/PM_{2.5}$ at Cooling Tower #24 of 11.5, 8.1, and 0.03 TPY $PM/PM_{10}/PM_{2.5}$, respectively, the requested increases to 18.7, 13.2, and 0.04 TPY, respectively, result in increases in $PM/PM_{10}/PM_{2.5}$ of 7.2, 5.1, and 0.01 TPY, respectively. The previous project to add two new vertical turbine pumps to Cooling Tower #2 (EU ID 902) to increase cooling at the Urea Plant, resulted in an increase in throughput and an increase in emission limits from 8.4, 5.9, and 0.02 TPY, respectively to 11.5, 8.1, and 0.03 TPY, respectively, resulting in increases of 3.1, 2.2, and 0.01 TPY, respectively.

Aggregated increases for $PM/PM_{10}/PM_{2.5}$ emissions from the cooling towers are then 15.0, 10.6, and 0.03 TPY, respectively. Because the aggregated increases for $PM/PM_{10}/PM_{2.5}$ are below their respective PSD significant increase thresholds of 25, 15, and 10 TPY, no additional PSD analysis is needed for this amendment based on particulate matter emissions.

Amendment received November 2, 2017, edits included with PCC's review of the ODEQ's pre-draft memorandum and permit:

The only physical change included in the proposed changes would be the addition of the Ammonia Storage Tank Flare which has emissions increases of less than 7.5 tons/year NO_X and CO each. The above analysis of Permit Application No. 2008-100-TV (M-8) states "*the increase in NO_X emissions of 23 TPY, when aggregated with the 29.9 TPY increase requested in the April 2015 submittals, is an increase of 52.9 TPY which is a significant increase. However, a reduction in NO_X of 58.7 TPY tons per year was realized in the application process by taking Ammonia Plants #1 and #3 out of service in a submittal received May 17, 2016 as an amendment to Permit No. 2008-100-C (M-6), which would net out of a significant increase. Regardless, a BACT analysis was required due to relaxation of a BACT limit.*" Thus, if the increase in this November 2, 2017 amendment of 7.5 tons/year were aggregated back to 2014, there would be a net increase of only 1.7 tons/year. However, as in evaluating this same amendment for associated emissions, it would not be reasonable to associate emissions from the ammonia flare with increases in emissions from other projects because accounting for this existing flare does nothing to debottleneck or create associated emissions. No additional PSD analysis is needed for this amendment based on NO_X emissions.

As noted in the analysis of the "Amendment to Permit Application No. 2008-100-TV and all subsequent amendments related to 2008-100-TV, received April 21, 2015", "*a reduction in CO of 2.0 TPY was not enough to avoid a significant increase in emissions for that analysis. However, a reduction in CO of 72.2 tons per year was realized in subsequent applications by taking Ammonia Plants #1 and #3 out of service (Amendment to Permit No. 2008-100-C (M-6) submitted May 17, 2016). The primary causes of the increase in CO were a correction in the rating of the Primary Reformer from 225 MMBtu/hr to 300 MMBtu/hr (accounting for 27 tons/year) and correction of the Ammonia Plant #4 Startup Vent EU ID 110b (accounting for another 96 tons/year.* No additional PSD analysis is needed for this amendment based on CO emissions.

Amendment submitted to amend Permit Application No. 2008-100–TV (M-9) received January 18, 2018, to revise emissions exhaust flow rates and emissions at EUG 3 Nitric Acid Plants.

There were no physical changes associated with this amendment. The increase in CO emissions for Nitric Acid Plant #1 is an increase of 81.8 TPY (from 14.6 TPY to 96.4 TPY) over what was permitted in Permit Nos. 2008-100-C (M-1) & (M-2). However, those permits were issued in July and May of 2012, considerably more than the typical three-year lookback for aggregating emissions in PSD analyses. If implemented in an issued permit, the request to increase CO emissions to 67.5 TPY in the amendment received by e-mail November 2, 2017, would have resulted in an increase in CO emissions of 52.9 TPY (from 14.6 TPY to 67.5 TPY) and the request to increase CO again in this amendment of January 18, 2018 would increase it by another 28.9

TPY (from 67.5 TPY to 96.4 TPY), for a total aggregated increase in CO emissions of 81.8 TPY, which is less than the 100 TPY significance threshold. Additionally, the amendment to Permit No. 2008-100-C (M-6) submitted May 17, 2016 confirmed that Ammonia Plants #1 and #3 were permanently taken out of service, resulting in a reduction in CO of 72.2 TPY, which would be credited if the analysis were to proceed to the second step which involves netting.

Finally, there has not been an NSPS modification as there is no physical change and an NSPS applicability is not triggered.

BACT ANALYSIS

<u>Ammonia Plant #4 Primary Reformer</u>

Background

After startup of the facility during 2010 under Permit No. 2008-100-C PSD, and after the burners in Ammonia Plant #4 Primary Reformer were replaced, it was discovered that the permit limit of 0.059 lbs-NO_X/MMBtu, based on a manufacturer's guarantee, could not be met. PCC believes that the burner manufacturer's guarantee could not be met in the primary reformer because of site specific operational factors (i.e., anticipated startup and shutdown impacts and those factors affecting combustion dynamics and resultant NO_X formation) impacting the operation of the existing, multi-burner "furnace". PCC self-disclosed the emissions exceedance and submitted an application for Permit No. 2008-100-C (M-1) PSD, requesting approval to conduct a post-operation trial BACT study over a period of time that would be used to determine a final, site-specific BACT emission limit.

At the end of the study, PCC submitted an application dated April 21, 2015, numbered as Permit No. 2008-100-C (M-8) (PSD) for the construction permit required by Permit Nos. 2008-100-C (M-1) PSD and 2008-100-C (M-2) PSD to incorporate the revised BACT limits for Ammonia Plant #4 Primary Reformer. PCC requested a two tier BACT limit of 0.1146 lb NO_x/MMBtu during normal operation, and 0.1658 lb NO_x/MMBtu during startup/shutdown/malfunction (SSM) and SSM - Related Scenarios. Both limits are on a 3-hour average basis. On December 30, 2015, PCC submitted revisions to address issues related to the air dispersion modeling and BACT analysis requested by DEQ. Note that while the revised BACT analysis submitted by PCC proposed limits for malfunction and malfunction related scenarios, the draft permit will not include limits for those scenarios. The omission of a BACT limit for these scenarios is consistent with an agreement reached between PCC and ODEQ during a conference call on 8/21/18; i.e., that excess emissions due to malfunction and malfunction related events; i.e., those meeting the regulatory definition of malfunction) will be reported consistent with the regulatory requirements Oklahoma 252:100-9.
Following is a summary of the final BACT analysis presented by PCC.

A. Best Available Control Technology Analysis

New sources or modified emission units subject to Prevention of Significant Deterioration (PSD) are required to undergo a Best Available Control Technology (BACT) review. BACT is a case-by-case evaluation, and is defined by Part 52 as:

> "………*an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant…………..*"

The BACT analysis is a case-by-case analysis that takes into account technical feasibility, energy and environmental impacts, and cost. An integral part of the BACT analysis is a search of the US EPA's RACT/BACT/LAER Clearinghouse (RBLC).

The BACT analysis follows the "top-down" approach. Following are the five basic steps of a "top-down" BACT analysis:

Step 1: Identify all control technologies.
Step 2: Eliminate technically infeasible options.
Step 3: Rank remaining control technologies by control effectiveness.
Step 4: Evaluate most effective controls and document results.
Step 5: Select BACT and document the selection as BACT.

The BACT five step "top-down" approach was used in this analysis to evaluate available control options for NO_X emissions from the Ammonia Plant #4 Primary Reformer (EU ID 101).

Step 1: Identify All Control Technologies

A search of the RACT, BACT, LAER Clearinghouse (RBLC) and other published sources was conducted to identify technologies currently in use for the pollution prevention and/or add-on control of NO_x emissions from primary reformer furnaces (i.e., hydrogen reformers) at ammonia plants. The following table summarizes the results of the search.

Reference	Facility Name/Location	Control Technology	Date Issued	NO_x Emission Limit
RBLC ID: ND-0033	Northern Plains Nitrogen Grand Forks Fertilizer Plant Primary Reformer	SCR Low-NO_x Burners	August 20, 2015	0.0120 lb/MMBtu 30-day rolling average
RBLC ID: AK-0083	Agrium U.S. Inc. Kenai Nitrogen Operations Primary Reformer Furnace	SCR	January 6, 2015	17.0 ppmv 30-day rolling average @ 3% O_2
RBLC ID:	Cronus Chemicals, LLC	SCR	September 5, 2014	0.0109 lb/MMBtu

Reference	Facility Name/Location	Control Technology	Date Issued	NO_x Emission Limit
IL-0114	Reformer Furnace	Low-NO_x Burners		30-day rolling average
RBLC ID: ND-0032	CHS, Inc. Spiritwood Nitrogen Plant Primary Reformer	SCR Low-NO_x Burners	June 20, 2014	0.0200 lb/MMBtu 30-day rolling average
RBLC ID: IN-0173 IN-0180	Midwest Fertilizer Corporation Reformer Furnaces (2)	SCR Low-NO_x Burners	June 4, 2014	9 ppmv 30-day rolling average @ 3% O_2
RBLC ID: AR-0121	LSB Industries El Dorado Chemical Company Primary Reformer	SCR	November 18, 2013	0.0124 lb/MMBtu 30-day rolling average
RBLC ID: IN-0179	Ohio Valley Resources Primary Reformer	SCR Good Combustion Practices	September 25, 2013	9 ppmv 30-day rolling average
RBLC ID: LA-0272	Dyno Nobel Louisiana Ammonia, LLC Primary Reformer Furnace	SCR Low-NO_x Burners	March 27, 2013	16.15 lb/hr maximum 58.96 ton/yr maximum 0.0140 lb/MMBtu annual average
RBLC ID: IA-0105	Iowa Fertilizer Company Primary Reformer	SCR	October 26, 2012	9 ppmv 30-day rolling average 56.0 ton/yr 12-month rolling average
RBLC ID: OK-0134 OK-0135	Pryor Chemical Company Primary Reformer #4	Low-NO_x Burners Good Combustion Practices	February 23, 2009 July 2012 (M-1)	11.93 lb/hr 3-hour average (initial) 0.2000 lb/MMBtu (initial) 0.1200 lb/MMBtu (interim)

<u>Add-On Control Options</u>

Add-on control technologies provide a chemically reducing (i.e., reversal of oxidation) substance to remove oxygen from nitrogen oxides. Examples include Selective Catalytic Reduction (SCR), which uses ammonia, and Selective Non-Catalytic Reduction (SNCR), which uses ammonia or urea. These control methods chemically reduce the valence level of nitrogen to zero after the valence has become higher. Some low-NO_X burners also are based partially on this principle.

- SCR

SCR is a post-combustion gas treatment process in which ammonia is injected into the exhaust gas upstream of a catalyst bed. On the catalyst surface, ammonia and nitrous oxide react to form diatomic nitrogen and water. When operated within the optimum temperature range of 480 to 800 ^oF, the reaction can result in removal efficiencies between 70 and 95 percent. SCR units have the ability to function efficiently under fluctuating temperature conditions (usually +/- 50 ^{o}F), although fluctuation in exhaust gas temperature reduces removal efficiency slightly by disturbing the chemical kinetics (speed) of the NO_X-removal reaction.

- SNCR

SNCR is a post-combustion NO_x control technology based on the reaction of urea or ammonia on NO_X. In the SNCR chemical reaction, urea (or ammonia) is injected into the combustion gas path to reduce the NO_x to nitrogen and water. The typical removal efficiency for SNCR is 30 to 95 percent. Utilized in conjunction with low-NO_X burners, removal efficiencies of 65 to 75 percent can be achieved. An important consideration for implementing SNCR is the operating temperature range. The optimum temperature range is approximately 1,600 to 2,100 ^{o}F. Operation at temperatures below this range results in ammonia slip. Operation above this range results in oxidation of ammonia, forming additional NO_X.

- Low-NO_X Burners

Low-NO_X burners are designed to control fuel and air mixing at each burner in the combustion unit to create larger and more branched flames. Peak flame temperature is thereby reduced, resulting in less NO_x formation. The improved flame structure also reduces the amount of oxygen available in the hottest part of the flame, which improves burner efficiency. Combustion, reduction and burnout are achieved in three stages within a conventional low-NO_X burner. In the first stage, combustion occurs in a fuel rich, oxygen deficient zone, where the NO_X is formed. A reducing atmosphere follows in the second stage, where hydrocarbons are formed which react with the already formed NO_X. In the third stage, internal air staging completes the combustion but may result in additional NO_X formation. Additional NO_X formation can be minimized by completing the combustion in an air lean environment. Plant experience shows low-NO_X burners can achieve a NO_X removal efficiency of up to a 74%.

<u>Pollution Prevention Options</u>

Pollution prevention options reduce the generation of NO_X emissions through temperature reduction in the combustion unit. Emissions of NO_X from combustion are primarily in the form of nitric oxide (NO). NO is generated to the limit of available oxygen in air at temperatures above 1,300 ^{o}C (2,370 ^{o}F). At temperatures below 760 ^{o}C (1,400 ^{o}F), NO is either generated in much lower concentrations or not at all.

Reducing temperature means avoiding the stoichiometric ratio (the exact ratio of chemicals that enter into reaction). Essentially, this technique dilutes calories with an excess of fuel, air, flue gas, or steam. Combustion controls use different forms of this technique and are different for fuels with high and low nitrogen content. Control of NO_X from combustion of low nitrogen content fuels (such as gas and oil) can be seen as lean versus rich fuel/air ratios. This technique avoids the ideal stoichiometric ratio because this is the ratio that produces higher temperatures that generate higher concentration of thermal NO_X. The basic technique is to reduce the temperature of combustion products with an excess of fuel, air, flue gas, or steam, thereby keeping the majority of nitrogen from becoming ionized (i.e., getting to a non-zero valence).

Temperature reducing technologies for external combustion (e.g., boilers, furnaces, and process heaters) include reducing excess air, use of off-stoichiometric combustion (over-fire air), use of low-NO_X burners, flue gas recirculation.

- Less Excess Air

  Excess air flow for combustion has been correlated to the amount of NO_X generated. Limiting the net excess air flow to under 2% can strongly limit the NO_X content of flue gas. Although there are fuel-rich and fuel-lean zones in the combustion region, the overall net excess air is limited when using this approach.

- Over-Fire Air

  When primary combustion uses a fuel-rich mixture, use of over-fire air completes the combustion. Because the mixture is always off-stoichiometric when combustion is occurring, the temperature is held down. After all other stages of combustion, the remainder of the fuel is oxidized in the over fire air.

- Low-NO_x Burners

  Low-NO_X burners provide a stable flame that has several different zones. For example, the first zone can be primary combustion. The second zone can be fuel reburning with fuel added to chemically reduce NO_X. The third zone can be the final combustion in low excess air to limit the temperature.

- Flue Gas Recirculation

  Recirculation of cooled flue gas reduces temperature by diluting the oxygen content of combustion air and by causing heat to be diluted in a greater mass of flue gas. Heat in the flue gas can be recovered by a heat exchanger. This reduction of temperature lowers the NO_X concentration that is generated.

Step 2: Eliminate Technically Infeasible Options

Of the demonstrated NO_X pollution prevention and control technologies summarized above, none are considered infeasible. However, SNCR and Flue Gas Recirculation have not been demonstrated as a control or pollution prevention technology, respectively, for NO_x emissions from primary reformers.

Step 3: Rank Remaining Control Technologies by Control Effectiveness

The most effective control technologies for the reduction of NO_x emissions at primary reformers are SCR, with or without Low-NO_x Burners. Typical control efficiencies range from 90 to 95 percent. The second most effective control technology is Low-NO_x Burners alone, or in combination with other Good Combustion Practices (i.e., pollution prevention technologies), with typical reduction efficiencies ranging from 50 to 74%.

Step 4: Evaluate Most Effective Controls and Document Results

According to the RBLC entries for PSD permits issued from 2012 to present [December 30, 2015], the most effective NO_X control technology is a SCR, with or without Low-NO_x Burners. All entries in the RBLC during this period specified SCR, with or without Low-NO_x Burners, as BACT for the control of NO_x emissions from natural gas-fired recovery furnaces.

Step 5: Select BACT

BACT was established as Low-NO_X Burners and Good Combustion Practices for the 264-burner, Ammonia Plant Primary Reformer (EU ID 101) in PCC's original PSD construction permit issued to the facility in February 2009. This original PSD construction permit included a BACT emission limit for NO_X of 0.053 lb/MMBtu, based on the Btu rating of the original burners. Due to maintenance problems, and as part of the ongoing construction process at Ammonia Plant #4, the original burners in the primary reformer were replaced with burners having a slightly higher Btu rating, resulting in a projected NO_X emission rate of 0.059 lb/MMBtu. Based on post-startup monitoring of emissions in late 2010, PCC notified the ODEQ in January 2011 that the BACT limit was being exceeded. As part of the subsequent enforcement action, Permit M-1 [Permit No. 2008-100-C (M-1) PSD was issued in July 2012 and included a revised, "interim" BACT emission limit for NO_X of 0.12 lb/MMBtu. The interim BACT limit was to be in effect until SCR controls and Good Combustion Practices (i.e., pollution prevention technologies including temperature reduction) could be re-evaluated and until a study could be completed to establish an accurate, site-specific BACT emission limit for the reformer furnace.

Add-on control options have been re-evaluated as required, and while SCR (with or without Low-NO_X Burners) was identified as the most effective NO_X control technology (see Steps 1 through 4 above), a BACT cost analysis performed by PCC indicates that the installation of a SCR unit on Ammonia Plant #4 Primary Reformer is cost prohibitive. That is, the cost analysis indicates that the [incremental] cost per ton of NO_X removal over and above that already accomplished using Low-NO_X Burners and other pollution prevention technologies is greater than $18K per ton. The cost analysis is presented below.

PCC's further evaluation of the Pollution Prevention Options discussed in Step 1 above indicates that the majority of the listed temperature reduction methodologies are already employed at the Ammonia Plant #4 Primary Reformer, resulting in exhaust gas temperatures below 1,700 ^oF during normal operation, which are at or near the 1,400 ^oF threshold below which thermal NO_X emissions are expected to be negligible. PCC's existing pollution prevention methodologies and work practices, described in the context of the temperature reduction options discussed above, are as follows:

- Less Excess Air – PCC normally conducts an annual shutdown to repair duct work, piping, process vessels, and other equipment, as necessary to eliminate leaks and reduce tramp air infiltration into the combustion system, with a goal of maintaining excess air at or below 2% by volume. Process operators monitor the O_2 level in the reformer exhaust gas and make adjustments as necessary to operate in the 2.0% range. Normally, the combustion process is very stable but adjustments are required as production rates are changed. This would include adding/removing the number of burners from service and then adjusting the combustion air flow up or down to achieve 2.0% O_2 in the reformer exhaust. Discrete monitoring of CO levels in the exit gas also assists process operators in making the proper adjustments.

- Over-Fire Air – While the reformer does not have an over-fire air system, process operators have the ability to adjust combustion air going to the burners as needed to optimize combustion, lower exhaust gas temperatures, and thus limit thermal NO_X formation. Process operators responsible for making this combustion air adjustment (i.e., a "combustion tuning" procedure), are guided by carbon monoxide (CO) monitoring. CO concentrations during normal operation typically range from 12 to 18 ppm, indicating that efficient combustion is maintained in similar manner to what an automated, Over-Fire Air system would achieve.

- Low-NO_X Burners – the primary reformer utilizes low-NO_X burners manufactured by Zeeco. Process operators measure the temperature of the burner tubes every other day to identify hot spots, which indicate the need for burner tuning. This burner tuning process occurs daily to ensure efficient combustion at lower operating temperatures.

On April 16, 2015, following the completion of the BACT Study, a Tier II construction permit application was submitted to incorporate into PCC's construction permit the final results of the equipment and operational study conducted on Ammonia Plant #4 to determine revised, site-specific BACT limits for NO_X emissions from the primary reformer furnace. Consistent with EPA Appeal Board decisions and other EPA New Source Review related guidance, and as allowed by ODEQ staff during a meeting on November 14, 2014, PCC proposed in the April 16th application to revise the BACT requirements for Ammonia Plant #4 to include a dual limit permitting approach, each limit established with a statistically based margin of compliance assurance. Through this construction permit modification, it was proposed that two BACT limits will apply to Ammonia Plant #4. The first BACT limit will regulate NO_X emissions during normal operations, and a second BACT limit will regulate NO_X emissions during startup, shutdown, and the alternate operating scenario of purge gas out with reduced plant operations, as follows:

<u>Proposed BACT Limit – Normal Operation</u>

Monitoring results from Ammonia Plant #4 obtained during the BACT Study demonstrate that under normal operation, NO_x emissions from the Ammonia Plant #4 Primary Reformer are relatively stable and can be maintained below a BACT limit of 0.1146 lb NO_X/MMBtu on a 3-hour average basis, with an acceptable margin of compliance assurance.

<u>Proposed BACT Limit – Startup and Shutdown and the alternate operating scenario of Purge Gas Out with Reduced Plant Operation</u>

During the BACT Study period, PCC was able to obtain monitoring results from the Ammonia Plant #4 Primary Reformer during startup, shutdown, or during an alternate operating scenario of purge gas out with reduced plant operation. This data indicates that NO_X emissions from Ammonia Plant #4 during startup, shutdown, or an alternate operating scenario of purge gas out with reduced plant operation can be maintained below a BACT limit of 0.1658 lb NO_X/MMBtu on a 3-hour average basis, with an acceptable margin of compliance assurance.

BACT Cost Analysis

The following table illustrates PCC's presentation of the cost analysis.

DETERMINATION OF TOTAL CAPITAL INVESTMENT			
	Estimate	**Selective Catalytic Reduction Unit**	**Source**
Purchased Equipment Costs			
SCR Unit (incl. catalyst, ductwork, fans)	Vendor Estimate (A)	$1,165,000	Dürr (8/28/13) + Haldor Topsoe (verbal)
Spare Catalyst Charge	Vendor Estimate	$150,000	Dürr (verbal)
Spare Parts	Vendor Estimate	$15,000	Dürr (verbal)
Instrumentation	0.10 A	$116,500	(a) Table 2.4
Sales Taxes	0.03 A	$34,950	(a) Table 2.4
Freight	0.05 A	$58,250	(a) Table 2.4
Purchased Equipment Costs	(B)	$1,539,700	
Direct Installation Costs			
SCR Unit Installation	Vendor Estimate	$236,500	Dürr (8/28/13)
Start-up Assistance & Supervision Labor by Vendor	Vendor Estimate	$30,000	Dürr (verbal)
Foundations and Supports	0.08 B	$123,176	(c) Table 3.8
Electrical	0.04 B	$61,588	(c) Table 3.8
Direct Installation Costs		$451,264	
Site Preparation	As Required	$50,000	PCC personnel
Buildings	As Required	$25,000	PCC personnel
Total Direct Capital Costs	(C)	**$2,065,964**	
Indirect Installation Costs			
General Facilities	0.05 C	$103,298	(b) Table 2.5
Engineering and Home Office Fees	0.10 C	$206,596	(b) Table 2.5
Process Contingency	0.05 C	$103,298	(b) Table 2.5
Construction Management	0.10 C	$206,596	PCC personnel
Lost Production		$1,050,000	PCC personnel
Total Indirect Installation Costs	(D)	**$1,669,789**	

DETERMINATION OF TOTAL CAPITAL INVESTMENT			
Project Contingency	(E) = 0.15 (C + D)	$560,363	(b) Table 2.5
Total Plant Cost	(F) = C + D + E	**$4,296,116**	(b) Table 2.5
Preproduction Cost	(G) = 0.02 F	$85,922	(b) Table 2.5
Inventory Capital	(H)	$17,187	PCC personnel
Total Capital Investment (TCI)	TCI = F + G + H	**$4,399,226**	

Emission control costs are based on EPA *Air Pollution Control Cost Manual, 6th edition*
(a) Section 1, Chapter 2: Cost Estimation: Concepts and Methodology
(b) Section 4.2, Chapter 2: Selective Catalytic Reduction with some factors sourced from EPA *OAQPS Control Cost Manual, 5th edition*
(c) Chapter 3:Thermal and Catalytic Incinerators

DETERMINATION OF ANNUAL COSTS			
TCI = $4,399,226			
CAPITAL RECOVERY FACTOR (CRF) PARAMETERS	**EQUIPMENT LIFE (YR)**	**INTEREST RATE %**	**CRF**
	10 (d)	7 (e)	0.142

	Suggested Factor		**SCR**
Direct Annual Costs			
Operating Materials (Ammonia)	10.9	lb/hr per vendor spec	$17,187
	$360.00	per ton (PCC outside sales price)	
Maintenance	0.015 TCI	(a) Equation 2.46	$65,988
Electricity	$50,000		$50,000
Catalyst/Carbon Replacement	$120,000		$120,000
Lost Production for Catalyst Replacement	$280,000		$280,000
Total Direct Cost			**$533,176**
Indirect Annual Costs	CRF * TCI	(a) Equation 2.54	**$626,351**
Total Annual Costs			**$1,159,526**

(d) Equipment Life value from Table B-2, Asset Class 29.0, see http://www.irs.gov/publications/p946/13081f34.html
(e) Interest Rate value from http://www.epa.gov/apti/video/economic/CurrentMethodsCostAnalysis.pdf

EMISSION CONTROL COSTS IN $/TON

Total Annual Costs	$1,159,526
Amount of NO_x Uncontrolled (tpy)	98.3 (Proposed annual BACT limit submitted in BACT Study Application (calculations amended 04/10/17)

Amount of NO_x Controlled (tpy)	34.2 (Based on BACT limit of 9 ppm at 3% oxygen (0.0260 lb NOx/MMBtu; at 300 MMBtu/hr heat input and maximum stack gas flow rate) - consistent with current EPA RBLC data)

NO_x Control Cost ($/ton) $18,079

Ammonia Plant #4 SU/SD Vent Flare (EU ID 110)

Background

On April 21, 2015, PCC submitted an amendment that included revisions to EUG 1 to add the Startup/Shutdown Vents at Ammonia Plants #4 as point sources in the facility's air permit. Carbon monoxide is emitted from these vents. On December 30, 2015, PCC submitted a revised BACT Analysis report and air dispersion modeling for Ammonia Plant #4 Primary Reformer. In that report, PCC included an updated ambient impact analysis for carbon monoxide (CO) emissions from the Ammonia Plant #4 Startup/Shutdown Vents (EU ID 110), revised emissions to reflect flare control and included the BACT analysis for the Ammonia Plant #4 Startup/Shutdown Vents (EU ID 110) addressing the proposed CO BACT limit addition for this source.

Following is a summary of the final BACT analysis presented by PCC which supports the flare control as BACT for the Startup/Shutdown Vents.

Step 1: Identify All Control Technologies

A search of the RBLC was conducted to identify technologies currently in use to control emissions from ammonia plant vents used during SSM events. Process venting from these sources during SSM include CO emissions. The following table summarizes the results of the search.

Reference	Facility Name/Location	Control Technology	Date Issued	NO_x Emission Limit
RBLC ID: IL-0114	Cronus Chemicals, LLC Tuscola, IL Primary Reformer	Flare	Sept. 2014	0.37 lb/MMBtu (pilot limit only) 82.3 tons/yr
RBLC ID: IN-0173 IN-0180	Midwest Fertilizer Corporation Mt. Vernon, IN Back End Ammonia Flare	Flare	June 2014	0.37 lb/MMBtu (pilot limit only) 804.76 tons/yr SSM venting; 3-hr average
RBLC ID: AR-0121	LSB Industries El Dorado Chemical Company El Dorado, AR Primary Reformer	Flare	Nov. 2013	0.082 lb/MMBtu (pilot limit; 3-hr average) 156.1 lb/hr (process gas; 3-hr average) 39.36 ton/yr (process gas; rolling 12 month)
RBLC ID: IN-0179	Ohio Valley Resources, LLC Rockport, IN Back End Ammonia Flare	Flare	Sept. 2013	0.37 lb/MMBtu (pilot limit only) 804.76 tons/yr SSM venting; 3-hr average
RBLC ID: IA-0106	CF Industries Port Neal Nitrogen Complex	Work practices, which include the	July 2013	No BACT limits

Reference	Facility Name/Location	Control Technology	Date Issued	NO_x Emission Limit
	Port Neal, IA	units being fueled with natural gas, maintaining pressure during idling, and proper design.		

Add-On Control Options

In cases where an industrial process stream contains CO, the facility may choose to route the volatile gas to a combustion/incineration device. Demonstrated add-on controls to reduce CO emissions include catalytic oxidation and thermal oxidation, including flares.

- Catalytic Oxidation

A catalytic oxidation system is designed such that the gas stream passes over a catalyst bed, where combustible compounds are oxidized. Catalytic oxidation allows this oxidation to take place at a faster rate and lower temperature than is possible with thermal oxidation. This process requires temperatures in the range of 500 to 1,000 ^{o}F to achieve high destruction efficiencies for CO. Below this temperature range, the reaction drops sharply and effective oxidation of CO is no longer feasible. Above this temperature, conventional oxidation catalysts break down and are unable to perform their desired functions. Aside from the need to operate within a specific temperature window, the exhaust gases must be relatively free of sulfur and other catalyst poisons and must have sufficient available oxygen for catalytic oxidation to operate effectively. Alternate variations on the standard catalytic oxidation technology include the use of recuperative and regenerative systems to improve thermal efficiency.

- Thermal Oxidation

A thermal oxidizer supplies sufficient combustion air and supplemental fuel at a suitable temperature to allow for oxidation of CO and other combustible compounds in the combustion chamber. There are two types of thermal oxidizers used for this purpose: regenerative and non-regenerative. Non-regenerative thermal oxidizers are reserved for applications where the heating value of the exhaust streams routed to the oxidizer is high enough that large amounts of supplemental fuel combustion or high levels of heat recovery are not necessary to bring exhaust gases to reaction temperature. The high level of heat integration offered by regenerative thermal oxidizers (RTOs), on the other hand, is particularly suited for high flow rate and low CO concentration waste streams that do not vary in composition or flow rate over time. RTOs use a high density packed heat transfer media, typically ceramic random saddle packing or honeycomb monolith structures, to preheat incoming waste gas streams and to achieve 85 to 95 percent heat recovery. If necessary, the feed gas stream can also be further heated to the RTO operating temperature (1,400 to 2,000 ^{o}F) through supplemental fuel combustion. AN RTO consists of at least two modules that are cycled between inlet and outlet service to maintain appropriate operating temperatures and to conserve as much thermal energy as possible.

- Flares

Flaring is a high-temperature oxidation process used to burn combustible components, mostly hydrocarbons, of waste gases from industrial operations. In combustion, gaseous hydrocarbons react with atmospheric oxygen to form carbon dioxide (CO_2) and water. In some waste gases, CO is the major combustible component.

Step 2: Eliminate Technically Infeasible Options

Information from the RBLC and other published sources indicate that add-on controls such as catalytic or thermal oxidation require fairly constant exhaust gas temperatures, and operation outside the optimum range due to intermittent operation can result in increased CO emissions. Due to the intermittent, short-duration operation of the Ammonia Plant #4 SU/SD Vents (i.e. venting only during SSM events events), add-on catalytic and thermal oxidation units are considered to be infeasible. Based on the results of the RBLC search for control options for process gas vents operating during SSM events, the two primary options are waste gas flares and the use of no controls. In the case of ammonia plant vents at PCC, both are feasible options.

Step 3: Rank Remaining Control Technologies by Control Effectiveness

The most effective option for reducing high levels of CO emissions is the use of a waste gas flare with a 98% control efficiency for CO emissions. In the case of PCC, the components of the waste gas stream are predominantly CO, CO_2, NH_3, and CH_4. Therefore the byproducts of a waste gas flare are CO_2 and water along with any combustion byproducts, including NO_X, CO, VOC and particulate matter.

Step 4: Evaluate Most Effective Controls and Document Results

Due to the high level of CO emissions that are only released over short periods of time; i.e. during startups/shutdowns, and as otherwise needed for malfunctions or maintenance, a waste gas flare is an effective control option. Additionally, during the periods when none of these events occur, the flare is a minimal contributor to total emissions and does not require a significant amount of continuous maintenance.

Step 5: Select BACT

PCC has proposed a waste gas flare as BACT to control SSM and maintenance related emissions of CO at the Ammonia Plant #4 SU/SD Vents. Due to the sporadic nature of flaring operations, a production-based BACT emissions limit is not feasible. DEQ has determined that a work practice standard of venting to a flare to control emissions during SSM and maintenance is BACT.

SECTION VI. COMPLIANCE ASSURANCE MONITORING EVALUATION

Background

Compliance Assurance Monitoring (CAM) applies to any pollutant-specific emissions unit at a major source that is required to obtain an operating permit, for any application for an initial operating permit submitted after April 18, 1998, that addresses "large emissions units," or any application that addresses "large emissions units" as a significant modification to an operating permit, or for any application for renewal of an operating permit, if the emissions unit meets all of the following criteria.

- It is subject to an emission limit or standard for an applicable regulated air pollutant
- It uses a control device to achieve compliance with the applicable emission limit or standard
- It has potential emissions, after the control device, of the applicable regulated air pollutant of 100 TPY or 10/25 TPY of a HAP

Compliance Assurance monitoring will be addressed in the application for the operating permit.

SECTION VII. OKLAHOMA AIR POLLUTION CONTROL RULES

OAC 252:100-1 (General Provisions) [Applicable]
Subchapter 1 includes definitions but there are no regulatory requirements.

OAC 252:100-2 (Incorporation by Reference) [Applicable]
This subchapter incorporates by reference applicable provisions of Title 40 of the Code of Federal Regulations listed in OAC 252:100, Appendix Q. These requirements are addressed in the "Federal Regulations" section.

OAC 252:100-3 (Air Quality Standards and Increments) [Applicable]
Subchapter 3 enumerates the primary and secondary ambient air quality standards and the significant deterioration increments. At this time, all of Oklahoma is in "attainment" of these standards.

OAC 252:100-5 (Registration, Emissions Inventory and Annual Operating Fees) [Applicable]
Subchapter 5 requires sources of air contaminants to register with Air Quality, file emission inventories annually, and pay annual operating fees based upon total annual emissions of regulated pollutants. Annual Emissions Inventories for the years 2009 and 2010 have been provided to Air Quality.

OAC 252:100-8 (Permits for Part 70 Sources) [Applicable]
Part 5 includes the general administrative requirements for Part 70 permits. Any planned changes in the operation of the facility that result in emissions not authorized in the permit and that exceed the "Insignificant Activities" or "Trivial Activities" thresholds require prior notification to AQD and may require a permit modification. Insignificant activities refer to those individual emission

units either listed in Appendix I or whose actual calendar year emissions do not exceed the following limits.

- 5 TPY of any one criteria pollutant
- 2 TPY of any one hazardous air pollutant (HAP) or 5 TPY of multiple HAP or 20% of any threshold less than 10 TPY for a HAP that the EPA may establish by rule

Emission limitations and operational requirements necessary to assure compliance with all applicable requirements for all sources are taken from the construction permit application, or are developed from the applicable requirement.

OAC 252:100-9 (Excess Emissions Reporting Requirements) [Applicable]
Except as provided in OAC 252:100-9-7(a)(1), the owner or operator of a source of excess emissions shall notify the Director as soon as possible, but no later than 4:30 p.m. the following working day of the first occurrence of excess emissions in each excess emissions event. No later than thirty (30) calendar days after the start of any excess emission event, the owner or operator of an air contaminant source from which excess emissions have occurred shall submit a report for each excess event describing the extent of the event and the actions taken by the owner or operator in response to this event. Request for mitigation, as described in OAC 252:100-9-8, shall be included in the excess emissions event report. Additional reporting may be required in the case of ongoing emission exceedances.

OAC 252:100-13 (Open Burning) [Applicable]
Open burning of refuse and other combustible material is prohibited except as authorized in the specific examples and under the conditions listed in this subchapter. The 0.0683 MMBtu/hour Ammonia Storage Flare Pilot Flare is an insignificant activity. The flare is smokeless.

OAC 252:100-19 (Particulate Matter (PM)) [Applicable]
Section 19-4 regulates emissions of PM from new and existing fuel-burning equipment, with emission limits based on maximum design heat input rating. Fuel-burning equipment is defined in OAC 252:100-19 as any internal combustion engine or gas turbine, or other combustion device used to convert the combustion of fuel into usable energy. Table 1.4-2 lists natural gas total PM emissions to be 7.6 lbs/million scf or about 0.0076 lbs/MMBTU, which is in compliance for all fuel burning units at the facility. The following table summarizes equipment subject to this rule, the Appendix C limits, and the potential emissions. As illustrated in the table, all emission units are in compliance with this rule.

Equipment	**Maximum Heat Input (MMBtu/hr)**	**Appendix C Emission Limit (lbs/MMBTU)**	**Potential Emission Rate (lbs/MMBTU)**
Ammonia Plant #4 Primary Reformer	300	0.29	0.0076
Ammonia Plant #4 Primary Ammonia Converter Startup Heater	40	0.50	0.0076
Nitric Acid Preheater #1	20	0.51	0.0076
Nitric Acid Preheater #4	20	0.51	0.0076
Boiler #1	53	0.37	0.0076
Boiler #2	80	0.37	0.0076

Equipment	Maximum Heat Input (MMBtu/hr)	Appendix C Emission Limit (lbs/MMBTU)	Potential Emission Rate (lbs/MMBTU)
Boiler #3	100	0.35	0.0076
Ammonia Storage Flare Pilot	0.0683	0.6	0.0076

Section 19-12 limits particulate emissions from emission points in an industrial process based on process weight rate, as specified in Appendix G. As shown in the following table, all emission points are in compliance with Subchapter 19.

EUG	Process Rate (TPH)	Appendix G Emission Limit (lbs/hr)	PTE (lbs/hr)
Granulator Scrubber #1	16.7	27.0	0.7
Granulator Scrubber #2	16.7	27.0	0.7
Granulator Scrubber #3	16.7	27.0	0.7
Cooling Tower #1	10,809	112.8	6.6
Cooling Tower #2	10,008	111.5	6.0

OAC 252:100-25 (Visible Emissions and Particulates) [Applicable]
No discharge of greater than 20% opacity is allowed except for short-term occurrences that consist of not more than one six-minute period in any consecutive 60 minutes, not to exceed three such periods in any consecutive 24 hours. In no case shall the average of any six-minute period exceed 60% opacity. The permit will require the use of natural gas in the fuel-burning units and maintenance and monitoring of all other particulate-emitting units to ensure the opacity standard is met.

OAC 252:100-29 (Fugitive Dust) [Applicable]
No person shall cause or permit the discharge of any visible fugitive dust emissions beyond the property line on which the emissions originated in such a manner as to damage or to interfere with the use of adjacent properties, or cause air quality standards to be exceeded, or to interfere with the maintenance of air quality standards. Most of the parking areas, unloading areas, and access areas are paved. Under normal operating conditions, this facility has negligible potential to violate this requirement; therefore it is not necessary to require specific precautions to be taken.

OAC 252:100-31 (Sulfur Compounds) [Applicable]
Part 2 limits the ambient air concentration of hydrogen sulfide (H_2S) emissions from any facility to 0.2 ppmv (24-hour average) at standard conditions which is equivalent to 283 $\mu g/m^3$. As discussed previously in the memorandum, the Ammonia Plant #4 Primary Reformer burns waste gas containing 20 gr/100 SCF of waste sulfur (H_2S). The primary fuel is natural gas but waste gas recovered from the Desulfurization Unit is used as fuel. This waste gas contains H_2S that was removed from the natural gas that is used as a raw material in the ammonia production process. Thus the total sulfur burned in the reformer will be the sulfur in the waste gas and also the sulfur in the natural gas fuel. PCC performed air dispersion modeling utilizing the AERMOD (Version 16216r) model with 2011-2015 meteorological data for Pryor to determine H_2S concentrations at the property boundary. Using emissions rates at the reformer stack based on 98% destruction and also 0% destruction, PCC demonstrated that concentrations at the property

line for these two scenarios were 0.07 mg/m^3 and 3.53 mg/m^3, both in compliance with the standard. Emissions from other natural gas fuel burning sources at the facility not accounted for in the model would account for approximately another 50% of what was modeled for the reformer. Additional modeling was not required because of the wide margin of compliance with the standard.
Part 5 limits sulfur dioxide emissions from new fuel-burning equipment (constructed after July 1, 1972). For gaseous fuels the limit is 0.2 lb/MMBTU heat input averaged over 3 hours. All equipment at this facility is being treated as new for purposes of this permit evaluation. For all equipment at the facility except the primary reformers, the permit requires the use of pipeline natural gas having no more than 0.25 grains/100 scf to ensure compliance with Subchapter 31, which easily meets the standard. As discussed above, the primary reformer burns waste gas containing waste sulfur (H_2S) from the Desulfurization Unit and the total sulfur content burned in the reformer will be the sulfur in natural gas fuel required plus the sulfur in the waste gas recovered from the Desulfurization Unit. From the "Emissions" section, the highest calculated SO_2 emission is 16.5 lbs/hr from the Ammonia Plant #4 Reformer which is rated at 300 MMBtu/hr. This equates to 0.055 lbs-SO_2/MMBTU, which is in compliance with the 0.2lb/MMBTU standard. These are peak emissions, which would not likely span the three-hour averaging period. All other fuel-burning equipment at the facility is fired on natural gas, easily meeting the standard.

OAC 252:100-33 (Nitrogen Oxides) [Applicable]
This subchapter limits new gas-fired fuel-burning equipment with rated heat input greater than or equal to 50 MMBtu/hr to emissions of 0.20 lbs of NO_X per MMBTU, three-hour average. The following table summarizes equipment subject to this rule and the potential emissions expressed in units of lbs/MMBtu. As illustrated in the table, all emission units will be in compliance with this rule.

Fuel-Burning Equipment Rated at ≥ 50 MMBtu/hr	**Heat Input Rating (MMBtu/hr)**	**Emission Factor (lbs/MMBtu)**	**Source of Emission factor**
Ammonia Plant #4 Primary Reformer	300	0.1658	ReBACT Limit
Boiler #1 and #2	53 and 80	0.049 *	AP-42; Table 1.4-1 Low NO_X burners
Boiler #3	100	0.049 *	AP-42; Table 1.4-1 Low NO_X burners

* Based on AP-42 factor of 50 lbs/MMscf converted to lbs/scf using a GCV for natural gas of 1,040 Btu/scf.

OAC 252:100-35 (Carbon Monoxide) [Not Applicable]
This subchapter affects gray iron cupolas, blast furnaces, basic oxygen furnaces, petroleum catalytic cracking units, and petroleum catalytic reforming units. It requires removal of 93% or more of CO by "complete secondary combustion" from new sources and also from existing sources located in or significantly impacting a non-attainment area for CO. There are no affected sources.

OAC 252:100-37 (Volatile Organic Compounds) [Applicable]
Part 3 requires storage tanks with a capacity of 400 gallons or more and storing a VOC with a vapor pressure greater than 1.5 psia to be equipped with a permanent submerged fill pipe or with

an organic vapor recovery system. There is one 1,000-gallon gasoline storage tank. It was installed in 1965 and predates this rule.

Part 5 limits the VOC content of coating used in coating lines or operations. This facility will not normally conduct coating or painting operations except for routine maintenance of the facility and equipment, which is not an affected operation.

Part 7 requires fuel-burning equipment to be operated and maintained so as to minimize VOC emissions. Temperature and available air must be sufficient to provide essentially complete combustion. The following combustion equipment is subject to this rule and is designed to provide essentially complete combustion of organic materials.

EMISSION UNITS			
EU/EUG ID	**Point ID**	**EU Name/Model**	**Construction Date**
EUG 1		**Ammonia Plants**	
1	101	300 MMBtu/hr Ammonia Plant #4 Primary Reformer	1995
1	102	Ammonia Plant #4 Condensate Steam Flash Drum	1995
1	107	Ammonia Plant #4 – Ammonia Converter Startup Heater	2012
EUG 4		**Nitric Acid Heaters**	
4	401	20 MMBtu/hr Nitric Acid Preheater #1	1966
4	403	20 MMBtu/hr Nitric Acid Preheater #4	1995
EUG 8		**Boilers**	
8	801	53 MMBtu/hr Boiler #1	1978
8	802	80 MMBtu/hr Boiler #2	1995
8	803	100 MMBtu/hr Boiler #3	2018
NA		**Insignificant Sources**	
NA	1001	0.0683 MMBtu/hr Ammonia Storage Flare Pilot	2018

Part 7 also regulates effluent water separators that receive water containing more than 200 gallons per day of VOC. There is no effluent water separator at this location.

OAC 252:100-40 (Control Of Emission Of Friable Asbestos) [Applicable]

This subchapter regulates the release of friable asbestos to the ambient air during demolition and renovation operations. Section 40-5, in addition to the requirements set forth for the handling of asbestos found in 40 CFR Part 61, Subpart M, contains provisions for handling, containerizing, storing, transporting and disposal of friable asbestos during demolition or renovation operations as well as maintenance of existing asbestos. The facility is subject to this rule.

OAC 252:100-42 (Toxic Air Contaminants (TAC)) [Applicable]

This subchapter regulates toxic air contaminants (TAC) that are emitted into the ambient air in areas of concern (AOC). Any work practice, material substitution, or control equipment required by the Department prior to June 11, 2004 to control a TAC shall be retained, unless a modification is approved by the Director. Because no AOC has been designated, there are no specific requirements for this facility at this time. However, PCC has requested enforceable limits on NH_3 emissions and has conducted air dispersion modeling to demonstrate that NH_3 concentrations at the property line will be in compliance with the current maximum ambient air concentration

(MAAC). Modeling was conducted using the AERMOD (Version 16216r) air dispersion model with 2011-2015 meteorological data for Pryor and the requested permitted emission limits. Modeling results indicate that the maximum modeled ambient concentration of ammonia of 1,399 µg/m^3 is below the MAAC for ammonia of 1,742 µg/m^3 (24-hour average basis).

OAC 252:100-43 (Testing, Monitoring, and Recordkeeping) [Applicable]
This subchapter provides general requirements for testing, monitoring and recordkeeping and applies to any testing, monitoring or recordkeeping activity conducted at any stationary source. To determine compliance with emissions limitations or standards, the Air Quality Director may require the owner or operator of any source in the state of Oklahoma to install, maintain and operate monitoring equipment or to conduct tests, including stack tests, of the air contaminant source. All required testing must be conducted by methods approved by the Air Quality Director and under the direction of qualified personnel. A notice-of-intent to test and a testing protocol shall be submitted to Air Quality at least 30 days prior to any EPA Reference Method stack tests. Emissions and other data required to demonstrate compliance with any federal or state emission limit or standard, or any requirement set forth in a valid permit shall be recorded, maintained, and submitted as required by this subchapter, an applicable rule, or permit requirement. Data from any required testing or monitoring not conducted in accordance with the provisions of this subchapter shall be considered invalid. Nothing shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

The following Oklahoma Air Pollution Control Rules are not applicable to this facility:

OAC 252:100-7	Permits for Minor Facilities	not in source category
OAC 252:100-11	Alternative Emissions Reduction	not requested
OAC 252:100-15	Mobile Sources	not in source category
OAC 252:100-17	Incinerators	not type of emission unit
OAC 252:100-23	Cotton Gins	not type of emission unit
OAC 252:100-24	PM from Grain, Feed, or Seed Operations	not in source category
OAC 252:100-39	Nonattainment Areas	not in subject area
OAC 252:100-47	Landfills	not in source category

SECTION VIII. FEDERAL REGULATIONS

PSD, 40 CFR Part 52 [Applicable]
There will not be a significant increase in emissions. The purpose of the BACT analysis for Ammonia Plant #4 Primary reformer was due to the replacement of burners and an increase in emissions above the established BACT limit. Reported potential emissions of NO_X and CO are greater than the major source threshold of 100 TPY of any single regulated pollutant and greater than the 250 TPY PSD threshold. Therefore, any future increases of emissions must be evaluated for PSD if they exceed a significance level. Ammonia is the only other pollutant that exceeds 100 TPY and it also has potential emissions exceeding the 250 TPY threshold, however, it is not a regulated pollutant under the CAA or DEQ Air Pollution Control rules at this time.

NSPS, 40 CFR Part 60 [Subpart Dc and Subpart G Applicable]

Subpart Dc, Small Industrial-Commercial-Institutional Steam Generating Units, affects steam generating units constructed after June 9, 1989, and with capacity between 10 and 100 MMBtu/hr. Boiler #1 was constructed prior to the effective date and is not subject to Subpart Dc. Boiler #2 and Boiler #3 are subject to the rule. Because they will not burn coal, oil, or wood fuels, the emissions standards of this subpart are not applicable. Only the recordkeeping and reporting requirements of 40 CFR 60.48c, as further described in 40 CFR 60.7, are applicable.

Subpart G, Standards of Performance for Nitric Acid Plants, affects any nitric acid production unit that commences construction or modification after August 17, 1971 and requires that no owner or operator shall cause to be discharged into the atmosphere from any affected facility any gases which contain nitrogen oxides, expressed as NO_2, in excess of 1.5 kg per metric ton of acid produced (3.0 lb per ton), the production being expressed as 100 percent nitric acid, and shall not exhibit 10 percent opacity, or greater. The Consent Decree executed between the US Environmental Protection Agency (EPA) Consent Decree (CD), Case: 5:14-cv-00271-F Document 3-1 filed: 03/18/14, entered by the Court on 5/28/14, established that the Nitric Acid Plants are subject to this rule.

Subparts K, Ka, Kb, Petroleum Liquids and VOL Storage Vessels. The 1,000-gallon gasoline storage tank at this facility is less than the storage capacity thresholds for these subparts and therefore is not an affected facility.

Subpart VV, Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry. The equipment is not in a SOCMI plant.

NESHAP, 40 CFR Part 61 [Applicable]

Subpart M, National Emission Standard for Asbestos, The provisions of this subpart are applicable to those sources specified in §§61.142 through 61.151, 61.154, and 61.155. Specifically, §61.145, Standard for Demolition and Renovation, affects facilities where demolition or renovation occurs in the presence of asbestos. The facility has been in compliance with this rule to date.

NESHAP, 40 CFR Part 63 [Subpart CCCCCC Applicable]

Section 63.43 of Subpart B requires that any facility not included in a listed source category (or for which a standard has not been promulgated under Section 112c of the CAA prior to May 15, 2002) that constructs or reconstructs a major source of HAP after June 29, 1998, is subject to a case-by-case MACT determination. This "112g" MACT determination may be superseded by any subsequently promulgated MACT requirement promulgated under Section 112c of the CAA.

This facility is not a major source of HAP. Compliance with the minor source limit was demonstrated with the testing for the Ammonia Plant #4 - Condensate Steam Flash Drum.

Subpart Q, National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers, applies to all new and existing industrial process cooling towers that are operated with chromium-based water treatment chemicals and are either major sources or are integral parts of facilities that are major sources as defined in §63.401. The cooling towers do not use any chromium-based water treatment chemicals and are therefore not subject to the requirements of this subpart.

Subpart FFFF (Miscellaneous Organic Chemical Manufacturing [MON]) affects miscellaneous organic chemical process manufacturing units (MCPU) that are major or are located at major sources, as major is defined in 40 CFR 63.2 and that satisfy each of three criteria: 1) The MCPU must manufacture certain organic chemicals as identified by a number of sub-criteria; 2) The MCPU processes, uses, or generates any of the organic HAP listed in section 112(b) of the CAA or hydrogen halide and halogen HAP, as defined in §63.2550; and 3) The MCPU may not be subject to any other MACT, except for process vents from batch operations within a chemical manufacturing process unit (CMPU), as identified §63.100(j)(4) in Subpart I.

This facility has a urea manufacturing plant, satisfying the first criterion. Urea ($CO(NH_2)_2$) is produced by combining ammonia (NH_3) with carbon dioxide (CO_2), but the urea plant itself does not process, use, or generate any of the organic HAPs listed in section 112(b). Production of urea requires ammonia, and the facility has an ammonia plant that provides ammonia. As discussed in the Process Description, ammonia production results in emissions of methanol, a 112(b)-listed organic HAP. However, on-site production of ammonia is not necessary to the manufacture of urea, so the ammonia production equipment is not considered to be part of "all equipment which collectively function to produce a product or isolated intermediate that are materials described in §63.2435(b)" as a MCPU, as defined in §63.2550. That definition also states that ancillary activities are not considered a process or part of any process. Criteria one and criteria two are not satisfied, therefore the urea plant is not subject to MON.

The ammonia plant meets criteria 2) and 3), but not 1) and is therefore not subject. There are no other emissions units at the facility subject to this rule.

Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, establishes national emission limitations and work practice standards for hazardous air pollutants (HAP) emitted from at major sources of HAP. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and work practice standards.

The only HAP emitted at the facility in significant quantities is methanol, which has total combined emissions of 8.89 TPY. The facility is therefore not a major source of HAP and as such has no affected sources.

Subpart CCCCCC, National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities. This subpart establishes national emission limitations and management practices for hazardous air pollutants (HAP) emitted from the loading of gasoline storage tanks at gasoline dispensing facilities (GDF). This subpart also establishes requirements to demonstrate compliance with the emission limitations and management practices. The affected source includes each gasoline cargo tank during the delivery of product to a GDF and each storage tank that is located at an area source. GDF having a monthly throughput of less than 10,000 gallons of gasoline must comply with the requirements in §63.11116. GDF having a monthly throughput of 10,000 gallons of gasoline or more must comply with the requirements in §63.11117. GDF having a monthly throughput of 100,000 gallons of gasoline or more must comply with the requirements in §63.11118.

The 1,000-gallon gasoline storage tank at PCC is subject to the applicable requirements of this rule as an existing GDF having a monthly throughput of less than 10,000 gallons of gasoline.

Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources, affects industrial, commercial, and institutional boilers as defined in §63.11237 that are located at, or are part of, an area source of hazardous air pollutants (HAP), as defined in §63.2, except as specified in §63.11195. Gas-fired boilers as defined in this subpart are not subject to this regulation. The boilers at this facility are fueled on natural gas.

CAM, 40 CFR Part 64 [Applicable]
This part applies to any pollutant-specific emissions unit at a major source that is required to obtain an operating permit, for any application for an initial operating permit submitted after April 18, 1998, that addresses "large emissions units," or any application that addresses "large emissions units" as a significant modification to an operating permit, or for any application for renewal of an operating permit, if it meets all of the following criteria.

- It is subject to an emission limit or standard for an applicable regulated air pollutant
- It uses a control device to achieve compliance with the applicable emission limit or standard
- It has potential emissions, prior to the control device, of the applicable regulated air pollutant of 100 TPY or 10/25 TPY of a HAP

Because the application for an initial operating permit was received on or after April 18, 1998, the "large emissions units" are subject to CAM. Other emissions units having potential emissions of 100 TPY or greater, but only prior to the control device, would be subject to this rule upon permit renewal. However, the applicant has elected to accept CAM requirements on these emissions units for this permit to establish the required monitoring criteria. Based on this, the emissions units having CAM requirements are listed in the following table. These emissions units are subject to permit limits for pollutants that must be controlled to maintain compliance with the NAAQS.

EU ID#	Point ID#	Source Description	Pollutant	Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Controlled Emissions (ton/yr)
7	701	Granulator Scrubber #1	PM	193	98.5	3.0
7	702	Granulator Scrubber #2	PM	193	98.5	3.0
7	703	Granulator Scrubber #3	PM	193	98.5	3.0

The Nitric Acid Plants were determined by EPA to be subject to NSPS Subpart G and are described as such in the Consent Decree. Also included in the Consent Decree is the requirement to install and operate continuous emissions monitoring for NO_X. This meets the exemption of 64.2(b)(1)(vi) and the Nitric Acid Plants have therefore been removed from CAM requirements. For the Granulator Scrubbers, Point ID #701, #702, and #703, respectively, CAM will be monitoring the throughput, initial performance testing to correlate the PM limit to an opacity action level, and continued opacity measurements using EPA Method 9. CAM for the Ammonia Plant #4 Primary Reformer, if required based on the new BACT emissions limit to be determined, will be included in the operating permit.

Chemical Accident Prevention Provisions, 40 CFR Part 68 [Applicable]
This facility will not process or store more than the threshold quantity of any regulated substance (Section 112r of the Clean Air Act 1990 Amendments). The facility has one 389,243 gallon nitric acid storage tank, one 62,563 gallon nitric acid storage tank, five 78,800 gallon ammonia storage tanks, and one 5,640,000 gallon ammonia storage tank. The ammonia tanks are subject to this rule. The facility is required to have a risk management plan for storing the ammonia. More information on this federal program is available on the web page:*www.epa.gov/rmp*.

Acid Rain, 40 CFR Part 72 (Permit Requirements) [Not Applicable]
This facility is not an affected source.

Stratospheric Ozone Protection, 40 CFR 82 [Not Applicable]
These standards require phase out of Class I & II substances and reductions of emissions of Class I & II substances to the lowest achievable level. This facility does not utilize any Class I & II substances.

Greenhouse Gas Reporting, 40 CFR Part 98 [Applicable]
The following rules are applicable to the facility but are not addressed in the permit because Oklahoma has not been delegated authority to enforce these rules.
Subpart A, General Provision
Subpart C, General Stationary Fuel Combustion Sources
Subpart G, Ammonia Manufacturing
Subpart V, Nitric Acid Production
Subpart PP, Suppliers of Carbon Dioxide

SECTION IX. COMPLIANCE

Tier Classification and Public Review

This application has been determined to be a Tier II based on the request for a construction permit modification considered significant under 252:100-8-7.2(b)(2) and which is not classified under Tier III.

PCC published a "Notice of Filing a Tier II Application" in *The Pryor Daily Times*, a daily newspaper published in the city of Pryor, Mayes County, on January 15, 2018. The notice stated that the application was available for public review at the Pryor Chemical Company office located at 4463 Hunt Street, Pryor, Oklahoma, or at the DEQ Air Quality Division's main office in Oklahoma City, or on DEQ's webpage, and that DEQ will prepare either a draft or a denial. No comments were received on the application. PCC requested concurrent Public and EPA reviews of the permit so a draft/proposed permit was issued to PCC and sent to the EPA.

PCC published a "DEQ Notice of Tier II Draft Permit" in *The Paper*, a weekly newspaper published in the city of Pryor, Mayes County, on March 11, 2019. The notice stated that the draft permit and the applications supporting the permit were available for public review at the Pryor Chemical Company office located at 4463 Hunt Street, Pryor, Oklahoma, or at the Pryor Public Library located at 505 East Graham Avenue, and at the DEQ Air Quality Division's main office in Oklahoma City, or on DEQ's webpage. The 30-day public review period and the 45-day EPA review period have lapsed and no comments were received on the permit except minor revisions by PCC as discussed in Section X Responses to Comments.

This facility is not located within 50 miles of the border of Oklahoma and any other state. PCC has submitted an affidavit documenting that it is not seeking a permit for land use or for any operation upon land owned by others without their knowledge. The affidavit certifies that PCC owns the real property. Information on all permit actions is available for review by the public in the Air Quality section of the DEQ Web page: www.deq.state.ok.us/.

Fee Paid

The following summarizes applications received, the required fees, and the amount paid. No additional fees are required at this time.

Date Received	Permit Number Assigned	Fee Assessed	Amount Paid	Balance Due
June 7, 2010	2008-100-TV	$2,000	$2,000	-0-
June 15, 2012	2008-100-TV (M-3)	$3,000	$3,000	-0-
March 25, 2013	2008-100-TV (M-4)	$3,000	$3,000	-0-
December 18, 2013	2008-100-TV (M-5)	$3,000	$3,000	-0-
April 21, 2015	2008-100-C (M-6) PSD	$5,000	$5,000	-0-
July 6, 2016	2008-100-C (M-7)	$5,000	$5,000	-0-
April 28, 2017	2008-100-TV (M-8)	$3,000	$3,000	-0-
Total Due				**-$0-**

Testing

The following table summarizes stack testing performed to date and compares the results to the permit limit. Test results are compared to current permit limits so that, whether the test passed the limits in effect at that time, the need for a retest can be determined from the information based on new permit limits. For EUs tested more than once, only the most recent test data is shown. Only the NO_X limits for the Nitric Acid Plants were not met. Note that the EPA Consent Decree tightened the limits on NO_X. Further, once installation of new controls and testing is complete, it is anticipated that passing results will be achieved. Finally, the granulator scrubbers are on the list of EUs to be tested but are pending testing.

EU	Permitted Pollutants To Be Tested	Permit Limit	Test Result	Test Date	EU Rated Capacity	Production Rate During Test
Ammonia Plant #4 - Condensate Steam Flash Drum	VOC	10.4 lbs/hr	0.42 lbs/hr	12/21/10	1,050 lbs-steam/hr	NA
	Methanol	3.86 lbs/hr	0.4 lbs/hr			
	NH_3	5.4 lbs/hr	4.9 lbs/hr			
Nitric Acid Plant # 1 - Fumeabator	NO_X	3.0 lbs/ton long-term	0.41 lb/ton	6/27/12	10 TPH Nitric Acid	7.9 TPH
		1.6 lbs/ton short-term				
	CO	4.0 lbs/hr	4.23 lb/hr			
	NO_X	2.5 lbs/ton long-term	1.08 lbs/ton	6/1/11	16.7 TPH Nitric Acid	14.1 TPH

Nitric Acid Plant # 4 - SCR Unit		3.0 lbs/ton short-term				
	CO	No Limit	0.28 lbs/hr			
	NH_3	0.9 lbs/hr	0.14 lbs/hr			
Ammonia Plant #4 - Carbon Dioxide Vents	CO	5.2 lbs/hr	0.07 lbs/hr	1/20/11	32.1 TPH Ammonia	26.3 TPH

SECTION X. RESPONSES TO COMMENTS

Comments Submitted by Pryor Chemical Company

Comment No. 1 - Pryor Chemical Company (PCC) requests to delete a reference to “Unplanned” Startup/Shutdown on page 14, Section II Equipment, since only emissions related to planned startups and shutdowns were to be permitted.

Response No. 1 – All references that imply the permitting of Unplanned Startups/Shutdowns were to be eliminated from the memo and permit. The requested deletion has been done.

Comment No. 2 – PCC requests to correct the first sentence of the paragraph on page 16 under, SECTION III, “PROCESS DESCRIPTION”, EUG No. 1 - Ammonia Plant #4, which states “To meet Consent Decree requirements, the existing fumeabator at Nitric Acid Plant #1 will be replaced by a non-selective catalytic burner followed by a SCR unit”. The statement should state that “the fumeabator was replaced”. The non-selective catalytic burner was installed in 2017 to meet the EPA CD deadline. Additionally, PCC requests to relocate the entire paragraph to EUG No. 3 – Nitric Acid Plants because it is not applicable to EUG No.1 – Ammonia Plant #4.

Response No. 2 – The requested changes were made.

Comment No. 3 – PCC requests to correct the discussion of EUG No. 8 on page 22 under SECTION III, “PROCESS DESCRIPTION”, to clarify that Boiler No. 3 has been installed and that there are now three operational boilers instead of only two. The installation of Boiler No. 3 was installed under a Tier I application submitted on March 25, 2013 and an amendment submitted on May 28, 2016. PCC also request to replace the term “capacity” with “heat input rate”.

Response No. 3 – The requested changes were made.

Comment No. 4 – Page 36, under Section IV, Emissions, PCC requests to change the designation of the Ammonia Storage Flare from EU ID 1001 to an insignificant activity and to relocate it to the list of Insignificant Activities. This is based on DEQ’s decision that the flare pilot is insignificant and that emissions from upset events are reported as excess emissions.

Response No. 4 - The requested changes were made.

Comment No. 5 – Page 41, Section IV. Emissions, PCC requests to delete Ammonia Storage Flare EU ID 1001 and its associated emission limits for NO_x and CO from the summary table and to revise the emission totals for NO_X and CO to reflect the requested deletions.

Response No. 5 – The requested changes were made.

Comment No. 6 – Page 42, Section IV. Emissions – Insignificant Activities PCC requests to change the heat input rating for the flare pilot from 0.0152 MMBtu/hr to 0.0683MMBtu/hr. The requested change reflects the new heat input value for the upgraded flare pilot, as indicated in the revised Insignificant Activities List in the notification submitted by PCC to the ODEQ on April 3, 2019.

Response No. 6 – The requested changes were made, except in discussion of modelling or application for modification where 0.0152 was evaluated as the emissions. However, this miniscule increase does not warrant any corrections to previous evaluations.

Comment No. 7 – Page 59, Section V. Prevention of Significant Deterioration Analysis, Permit Application No. 2008-100-C (M-6) PSD received April 21, 2015, PCC requests to correct the rating of EU ID 803 – Boiler No.3 from 80 MMBtu/hr to 100 MMBtu/hr. PCC states that the requested change is consistent with applications/application amendments submitted by PCC, as well as other references in the draft permit.

Response No. 7 – The correction was made. Although not included in the list of changes accompanying the April 2015 application, emissions for Boiler No. 3 based on a rating of 100 MMBtu/hr were included in the application. Revised air dispersion modelling to include Boiler No. 3 was submitted May 17, 2016.

Comment No. 8 – Page 78, Section VII. Oklahoma Air Pollution Control Rules, PCC requests to correct the heat input rating of the Ammonia Plant #4 Primary Ammonia Converter Startup Heater from 22.08 MMBtu/hr to 40 MMBtu/hr. PCC states that the requested change is consistent with applications/application amendments submitted by PCC, as well as other references in the draft permit. The requested change to the heat input rating for the Ammonia Storage Flare Pilots is consistent with the revised Insignificant Activities List in the notification submitted by PCC to the ODEQ on April 3, 2019.

Response No. 8 – The requested change was made. This request was made in the April 21, 2015 application.

Comment No. 9 – Page 80, Section VII. Oklahoma Air Pollution Control Rules, OAC 252:100-37, Emissions Units table, correct the installation dates of Boiler No. 3 and Ammonia storage Flare Pilots from "Pending" and "1996" to 2018. Also correct the rating of the Ammonia Storage Flare Pilot from 0.0152 MMBtu/hr to 0.0683 MMBtu/hr. PCC states that on-site construction of Boiler #3 was initiated in August 2018, the requested change to the heat input rating for the Ammonia Storage Flare Pilots is consistent with the revised Insignificant Activities List in the notification submitted by PCC to the ODEQ on April 3, 2019 and that the requested date change reflects the correct construction date for the upgraded flare pilots.

Response No. 9 – The requested changes were made.

Comment No. 10 – Page 1, Specific Conditions, Specific Condition No. 1.A, EUG No. 1 – Ammonia Plant, page 1, PCC requests to correct reference to "Specific Condition No. 7.B" to "Specific Condition 7.A.". The requirement for good combustion practices is in Specific Condition No. 7.A, not 7.B. Specific Condition No. 7.B addresses the requirements for good "operation" practices.

Response No. 10 – The requested change was made.

Comment No. 11 – Page 3, Specific Conditions, Specific Condition No. 1.C, EU ID 102 – Ammonia Plant #4 Steam Flash Drum, remove the stack discharge rate from the table of emissions limits. PCC states the following rationale: The lb/hr stack gas discharge rate represents the maximum throughput capacity of the unit. In permits M-1 and M-2, the stack gas discharge rate was required to be used as a constant, along with monthly measured concentration values, to calculate a mass rate (lb/month) to demonstrate compliance with an annual methanol limit, as follows: "*Permittee shall assume the maximum design discharge stack gas flow from the Condensate Steam Flash Drum exhaust of 1,050 pounds per hour in calculating the methanol emissions to ensure that emissions are at or below the limit of 9.5 tons per year*." Note here that methanol limits and associated compliance demonstration requirements have been removed from draft Permit M-6. Specific Condition No. 12.a in draft Permit M-6 requires that the permittee keep records of *"The total throughput of raw materials and products having limits specified in Condition #1; hourly, daily, and 12-month rolling cumulative total, as specified in the condition for each limit."* Consider, as stated above, that the stack gas discharge rate is a maximum capacity value, and that the rate was never required to be a measured value subject to a record keeping limit. Because the demonstration of compliance with the ammonia emission limits for the Steam Flash Drum in draft Permit M-6 is to follow the good operational practices specified in Specific Condition No. 7.B, a steam throughput limit is not necessary and should be removed from the permit.

Response No. 11 – The requested change was made. Since NH_3 emissions are related to steam discharge and the permitted NH_3 limit is based on the maximum process steam discharge design capacity, it is not necessary to impose a limit on the capacity. Note that an enforceable limit on methanol was previously removed for similar reasoning, i.e. the removal of Ammonia Plants #1 and #3 and their associated condensate steam flash drum (EU ID 1/EP 104) reduced the PTE for methanol to less than 10 TPY because the remaining Ammonia Plant #4 Steam Flash Drum has a PTE of slightly over 8 TPY, also based on maximum steam discharge design capacity. Although there are requirements related to chemical accident prevention under 40 CFR Part 68 for facilities storing the threshold quantity of NH_3, air emissions of NH_3 are not a regulated pollutant elsewhere under the CAA or AQD rules. However there are certain notification requirements under CERCLA for which PCC believes it is advantageous to have limits on NH_3 emissions established in an air quality permit. The demonstration of compliance is currently limited to controlling process conditions as required by Specific Condition No. 7.B - Good Operation Practices so as to limit hourly and annual emissions to the values specified in the following table. At such time NH_3 were to become a regulated pollutant, it may be necessary to revise the demonstration of compliance to address specific operating parameters and/or some other method of demonstration.

Comment No. 12 – Page 3, Specific Conditions, Specific Condition No. 1.D, EU ID 110 – Startup/Shutdown Vent Flare, PCC requests to "add the emission limits for the flare consistent with applications/application amendments submitted by PCC, as well as other references in the draft permit (e.g., Memorandum – Emissions, EU ID 110 Startup/Shutdown Vent Flare, page 28)". PCC states that the emission limits appear to have been inadvertently omitted from the draft permit.

Response No. 12 – The requested change was made. Note that these are planned startups/shutdowns for which it was agreed could be permitted, provided that "unplanned" and "malfunction" could not be permitted. Also, to avoid confusion over the requirement in the condition to route malfunctions to the flare, DEQ is adding clarification that malfunction emissions are not permitted with limits as such. Malfunction emissions have to be reported as exceedances. Finally, the emissions included separately in the memo for the flare pilot are being separated out as insignificant.

Comment No. 13 – Page 8, Specific Conditions, Specific Condition No. 1.Q, EU ID 901 – Cooling Tower No. 1, PCC requests to correct the PM limit from 66.6 lbs/hr to 6.6 lbs/hr. PCC states that the larger number is a typographical error and that the correct value of 6.6 lbs/hr was included in an e-mail submittal on September 11, 2018.

Response No. 13 – The requested change was made.

Comment No. 14 – Page 12, Specific Conditions, Specific Condition 10, PCC requests to establish initial testing requirements for NH_3 emissions from Nitric Acid Plants #1 and #4 adsorption tower tail gas. The reason is because Specific Condition No. 1.F.ii states that compliance with the ammonia slip limits for Nitric Acid Plants #1 and #4 shall be verified by the initial performance test required by Specific Condition No. 10.

Response No. 14 – The requested change was made.

Comment No. 15 – Page 12, Specific Condition No. 11 for Insignificant records, PCC requests to remove from the table of insignificant tanks the following:

Name and Contents	Capacity (gallons)	Reason for Removal
AU & BU Urea Blend Tanks	10,000	Out of service
Atmospheric Anhydrous Ammonia Storage Tank	5,640,000	Does not vent to atmosphere
Wastewater Storage Tank	1,000,000	Trivial Activity
2100 Nitric Acid Storage Tank	389,243	Trivial Activity
200 Nitric Acid Storage Tank	62,563	Trivial Activity
RO Treated Water Storage Tank	50,000	Trivial Activity
5 – Pressurized Anhydrous Ammonia Storage Tanks	78,800 each	Do not vent to atmosphere

PCC requests to remove from the list of insignificant activities the following:

0.0152 MMBtu/hr pilot for Ammonia Storage Flare (Duplicate entry)
Nitric Acid Loading to Trucks and Railcars (Trivial activity)
Off-Specification UAN and AN Loading to Trucks and Railcars (Out of service)
Maintenance Parts Washing (Trivial Activity)

PCC requests to add to the table of insignificant tanks, one 1,000-gallon diesel fuel storage tank (existing) used to fuel mobile plant equipment.

PCC requests to add to the list of insignificant activities, the following:

Catalyst Building Fume Hood (New construction)
Catalyst Building Pelletizing Room Exhaust Vent (New construction)
Catalyst Screener (New construction)
Ammonia Flare Pilot - 0.0683 MMBtu/hour (Existing)

PCC states that the requested changes are consistent with the revised Insignificant Activity List in the notification submitted by PCC to the ODEQ on April 3, 2019.

Response No. 15 – The requested changes were made.

SECTION XI. SUMMARY

There are no active Air Quality compliance or enforcement issues that would affect the issuance of this permit. Issuance of the construction permit is recommended.

PERMIT TO CONSTRUCT
AIR POLLUTION CONTROL FACILITY
SPECIFIC CONDITIONS

Pryor Chemical Company **Permit No. 2008-100-C (M-6) PSD**
Pryor - Mid America Industrial Park Facility

The permittee is authorized to construct in conformity with the specifications in the applications and amendments dated submitted to Air Quality on June 7, 2010, November 9, 2010, December 15, 2010, May 3, 2011, June 15, 2012, March 25, 2013, May 28, 2013, December 18, 2013, December 2, 2014, April 21, 2015, December 30, 2015, May 17, 2016, July 6, 2016, January 24, 2017, April 19, 2017, April 28, 2017, September 7, 2017, September 15, 2017 and November 2, 2017 and January 18, 2018, edits on the draft permit received through November 30, 2018, revised insignificant activities submitted by e-mail on April 4, 2019, comments submitted by the applicant during public comment period on April 4, 2019 and edits on the draft received by e-mail on May 3, 2019. The Evaluation Memorandum dated May 7, 2019, explains the derivation of applicable permit requirements and the estimates of emissions; however, it does not contain operating limitations or permit requirements. Commencing construction or operations under this permit constitutes acceptance of, and consent to, the conditions contained herein.

1. Points of emission and emissions limitations. Permittee shall maintain and operate the facility in a manner to prevent the exceedance of ambient air quality standards.
[OAC 252:100-8-6(a)(1)], [OAC 252:100-7-15(d)]

   The recording frequencies required by this permit are deemed to satisfy the averaging periods required to meet the primary and secondary ambient air quality standards.

   Nothing in this permit shall supersede or preclude a requirement of a federal rule or a Consent Decree.

   EUG NO. 1 - AMMONIA PLANT #4

   A. Maximum production of ammonia from Ammonia Plant #4 shall not exceed the permitted production capacity of 770 tons per day. Compliance with the limits of this condition shall be demonstrated by the permittee following good combustion practices as required by Specific Condition No. 7.A so as to limit hourly and annual emissions to the values specified in the following tables and by firing only the gaseous fuels having the specified in Specific Condition No. 3. Compliance with the SO_2 limit, which was derived using the maximum amount of sulfur that could be contained in the waste gas, is determined by the fuel sulfur monitoring requirements of Condition No. 3.

EU ID 101 – Ammonia Plant #4 Primary Reformer (300 MMBtu/hr)

Pollutant	Maximum (lb/hr)	Annual (ton/yr)
CO	24.3	106.2
NO_X	34.4	

Pollutant	**Maximum (lb/hr)**	**Annual (ton/yr)**
Upper Prediction Limit – Normal Operation 0.1146 Lbs/MMBTU		
NO_X Mean Value – Normal Operation 0.0748 Lbs/MMBTU		98.3
NO_X UPL – Startup/Shutdown/Purge Gas Out with Reduced Plant Operations 0.1658 Lbs/MMBTU	49.8	
PM	2.2	9.6
PM_{10}	2.2	9.6
$PM_{2.5}$	2.2	9.6
VOC	1.6	7.0
SO_2	16.5	3.1
NH_3 from Un-scrubbed NH_3 Ammonia/AN Solution/Urea Plant Sources	520.5	265.2

i. SO_2 limits on the primary reformer at Ammonia Plant #4 include waste fuels. See Specific Condition No. 3 for restrictions on natural gas.

ii. NH_3 emissions shall be documented by tracking venting hours and using the mass balance derived emission rate (in lb/hr) for each of the following scenarios to determine compliance with the annual limit.

Operating Scenario	**Process Rate (TPD)**	**HRU Bypassed (Y/N)**	**AN Purge Gas Scrubber Bypassed (Y/N)**	**Reformer Bypassed (Y/N)**	**Ammonia Emission Rate (lb/hr)**
1	770	No	No	No	0.01
2	770	Yes	Yes	Yes	425.30
3	770	Yes	No	No	2.13
4	300	Yes	No	Yes	41.43
5	770	No	Yes	No	0.97
6	770	No	Yes	Yes	48.52
Urea Plant #2 Head Tank Gas Stream					95.20

iii. CO emissions from the primary reformer shall be tested once every five years during the term of the permit, with the results included in the renewal application.

B. Maximum emissions from the Ammonia Plant #4 - Ammonia Converter Startup Heater shall not exceed the limits specified in the following table.

EU ID 107 - Ammonia Plant #4 Ammonia Converter Startup Heater

40.00 MMBtu/hour Converter startup heater – Ammonia Plant #4

Pollutant	Emission Factor		Emissions	
	Value	Units	Max. (lb/hr)	Annual (ton/yr)
CO	84	lbs-CO/MMscf	3.3	14.2
NO_X	100	lbs-NO_x/MMscf	3.9	16.9
PM	7.6	lbs-PM/MMscf	0.3	1.3
PM_{10}	7.6	lbs-PM_{10}/MMscf	0.3	1.3
$PM_{2.5}$	7.6	lbs-$PM_{2.5}$/MMscf	0.3	1.3
SO_2 primary fuel	0.25	gr-sulfur/100 scf (avg)	0.1	0.2
VOC	5.5	lbs-VOC/MMscf	0.3	1.0

C. Maximum steam discharge rates and emissions from the Ammonia Plant #4 Condensate Steam Flash Drum shall not exceed the limits specified in the following tables. The permittee shall control process conditions as required by Specific Condition No. 7.B, so as to limit hourly and annual emissions to the values specified in the following table.

EU ID 102 - Ammonia Plant #4 Condensate Steam Flash Drum

Pollutant		Emissions	
		Maximum (lb/hr)	Annual (ton/yr)
NH_3		8.2	35.7

D. During Startup, Shutdown, Malfunction and Maintenance events, emissions from the EU ID 110 Startup/Shutdown Vent shall be routed to a flare that is capable of converting 98% of the CO emissions to CO_2. Permittee shall have the Ammonia Plant #4 Startup/Shutdown Vent Flare installed and operational within 18 months of the final issuance of this permit. The following CO limit applies for planned Startup/Shutdown and Maintenance events only. Unplanned events including malfunctions are to be reported in accordance with OAC 252:100-9.

EU ID 110 Startup/Shutdown Vent Flare

Pollutant	Emission Factor Reference	Emissions	
		Max. (lb/hr)	Annual (ton/yr)
CO (Startup/Shutdown)	98% reduction of combined flow from two vents 110a and 110b	242.0	18.2

E. Limits on Urea Plant #2 Ammonia Recovery Tank.

EU ID 111 Urea Plant #2 Ammonia Recovery Tank

Pollutant	Emissions	
	Max. (lb/hr)	Annual (ton/yr)
NH_3	36.5	49.8

i. Compliance with the NH_3 emission limits shall be demonstrated by monitoring the ammonia concentration in the tank at least weekly. Liquid additions to the tank shall be managed to prevent the NH_3 concentration from reaching the saturation point of 17%.

EUG NO. 3 – NITRIC ACID PLANTS #1 and #4

F. Maximum NO_X emissions from Nitric Acid Plant #1 and Nitric Acid Plant #4 shall not exceed the limits specified in the following tables. Compliance with the NO_X emission limits shall be demonstrated per the requirements of the EPA Consent Decree specified in Specific Condition No. 2 of this permit.

EU ID 301 and 303 – Nitric Acid Plants #1 and #4

Emissions Point	NO_X Emissions			
	Long Term Limits**		Short Term 3-hour Rolling Average*	NSPS Subpart G 3-hour Rolling Average***
	Annual (ton/yr)	365-day Rolling Average (lb/ton)	Maximum (lb/ton)	Maximum (lb/ton)
Plant #1	26.3	0.6	1.0	3.0
Plant #4	43.8	0.6	1.0	3.0

* Effective January 1, 2018 ; excludes SSM related emissions.
** Effective January 1, 2019, or 365 operating days following startup, whichever date is later; includes SSM related emissions.
***Effective January 1, 2018; excludes SSM related emissions.

i. Tail gases exiting the top of the absorption towers on Nitric Acid Plant #1 shall pass through a non-selective catalytic burner followed by a SCR unit. The catalytic burner shall burn only natural gas and ammonia plant synthesis gas. Emissions of CO shall not exceed 22.0 lbs/hr and 96.4 TPY. Compliance shall be demonstrated by initial stack testing as specified in Specific Condition No. 10 while burning the worst case fuel gas.

ii. Hourly and Annual Limits for Ammonia Slip Emissions. Compliance shall be based on maximum concentrations of 100 ppmv in the exhaust gas of the SCR during normal operations and 1,000 ppmv during startup or shutdown related operations. Initial compliance with the limit shall be verified by the initial performance test required in Specific Condition No. 10. Continuous compliance shall be documented by means of an initial performance test for NH_3 emissions, tracking nitric acid production, and operation of the SCR unit in accordance with the manufacturer's recommendations. Records of these monitoring parameters and operating practices shall be maintained at the facility.

EU ID 301 - Nitric Acid Plant #1

Emissions Point	NH_3 Slip Emissions	
	Maximum (lb/hr)	Annual ton/yr
Plant #1	5.4 Normal Operations	29.1
	41.6 Startup/Shutdown Related	

EU ID 303 - Nitric Acid Plant #4

Emissions Point	NH_3 Slip Emissions	
	Maximum (lb/hr)	Annual ton/yr
Plant #4	7.3 Normal Operations	52.5
	61.9 Startup/Shutdown Related	

EUG NO. 4 – NITRIC ACID PREHEATERS #1, and #4

G. Emissions from each individual nitric acid preheater shall not exceed the limits specified in the following table. The permittee shall follow good combustion practices as required by Specific Condition No. 7.B to limit hourly and annual emissions to the values specified in the following table. Compliance with the SO_2 limit is determined by the fuel sulfur monitoring requirements of Condition No. 3.

EU IDs 401 and 403 - Nitric Acid Preheaters #1 and #4 (20 MMBTUH each)

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
CO	1.7	7.1
NO_X	1.0	4.3
PM	0.2	0.7
PM_{10}	0.2	0.7
$PM_{2.5}$	0.2	0.7
VOC	0.2	0.5
SO_2	0.1	0.2

EUG NO. 5 – CARBON DIOXIDE VENTS

H. PCC produces carbon dioxide as a saleable product. Carbon monoxide, ammonia slip, methanol, and VOC are components of the carbon dioxide generated as an off-gas from the ammonia manufacturing process. Carbon dioxide venting is limited as indicated in the following table for the purpose of limiting the associated emissions. Carbon monoxide, ammonia slip and VOC emissions from the Carbon Dioxide Vents shall not exceed the limits specified in the following tables. No limits are imposed on methanol as the PTE does not exceed 10 TPY.

Carbon Dioxide Vent – Ammonia Plant #4 (EU IDs 501a, 501b and 501c)

Pollutant	Emissions Factor Lbs/throughput basis	Emissions	
		Lbs/hr	TPY
CO	0.1 lb/ton-CO_2	4.1	17.6
NH_3	0.128 lb/ton- NH_3	4.2	18.1
VOC	0.044 lb/ton- NH_3	1.5	6.3

Ammonia Plant #4 can vent to EU IDs 501a, 501b, or 501c.

EU ID 501a is the CO_2 Tower Vent located at Ammonia Plant #4.
EU ID 501b is the CO_2 Vent located at the CO_2 Plant.
EU ID 501c is the CO_2 Plant – Pressure Control Vent.

For compliance demonstration purposes, emissions from EU IDs 501b and 501c will be accounted for in the calculation of emissions at EU ID 501a.

Specifically, compliance with the carbon monoxide emission limits shall be demonstrated by multiplying the actual daily ammonia production total by 1.25, which is the stoichiometric ratio of CO_2 generated from the ammonia production process with a contingency; multiplying that product by an industry established carbon monoxide ratio of 0.1 lb-CO per ton CO_2; and then dividing the result by the process equipment (i.e., ammonia process equipment) operating hours for that day. Stack testing performed on January 20, 2011 demonstrated compliance with the current limit of 5.2 lbs/hr and with the proposed new limit of 4.1 lbs/hr.

EUG NO. 6 - AMMONIUM NITRATE PLANTS #1 and #2

The Ammonium Nitrate Plants are a closed system and as such have only small fugitive emissions of less than 5 TPY. These are included as Insignificant Activities.

EUG NO. 7 - GRANULATOR SCRUBBERS #1, #2, and #3

J. Maximum dry ammonium nitrate production shall not exceed 16.7 tons per hour from the granulator production system or prill tower controlled by either Granulator Scrubber #1, #2, or #3, 24-hour average. Compliance with the granulator or prill tower production limits and the emission limits indicated in the table below shall be demonstrated by dividing the actual daily dry ammonium nitrate production total by the process equipment operating hours for that day.

K. Emissions from any individual granulator scrubber shall not exceed the following limits.

EU IDs 701, 702 and 703 - Granulator Scrubbers #1, #2, and #3

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
PM	0.7	3.0

Pollutant	Emissions	
	Maximum (lb/hr)	**Annual (ton/yr)**
PM_{10}	0.7	3.0
$PM_{2.5}$	0.7	3.0
NH_3	2.4	10.3

EUG NO. 8 – BOILERS #1, #2 and #3

L. Emissions from each boiler shall not exceed the following limits. Compliance with the limits shall be demonstrated by the use of natural gas fuel and by following the Good Combustion practice as specified in Specific Condition 7.A of this permit.

EU ID 801 - Boiler #1 (53 MMBTUH)

Pollutant	Emissions	
	Maximum (lb/hr)	**Annual (ton/yr)**
CO	4.3	18.8
NO_X	2.6	11.2
PM	0.4	1.7
PM_{10}	0.4	1.7
$PM_{2.5}$	0.4	1.7
SO_2	0.1	0.2
VOC	0.3	1.3

EU ID 802 – Boiler #2 (80 MMBTUH)

Pollutant	Emissions	
	Maximum (lb/hr)	**Annual (ton/yr)**
CO	6.5	28.3
NO_X	3.9	16.9
PM	0.6	2.6
PM_{10}	0.6	2.6
$PM_{2.5}$	0.6	2.6
SO_2	0.1	0.3
VOC	0.5	1.9

EU ID 803 - Boiler #3 (100 MMBTUH)

Pollutant	Emissions	
	Maximum (lb/hr)	**Annual (ton/yr)**
CO	8.1	35.4
NO_X	4.9	21.1
PM	0.8	3.3
PM_{10}	0.8	3.3
$PM_{2.5}$	0.8	3.3

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
SO_2	0.1	0.3
VOC	0.6	2.4

M. NSPS Dc, §60.48c, Reporting and recordkeeping requirements. [40 CFR 60.72]
   i. Boiler #2 and Boiler #3. As an alternative to meeting the daily record keeping requirements of §60.48c(g)(1), the permittee may record and maintain records of the amount of each fuel combusted in each boiler each calendar month.

EUG NO. 9 - COOLING TOWERS #1 and #2

N. Maximum circulation rate of Cooling Tower # 1 shall not exceed 2,592,000 gallons per hour.
O. Maximum circulation rate of Cooling Tower No. 2 shall not exceed 3,264,000 gallons per hour.
P. No chromium-containing additives shall be used in the cooling towers.
Q. Emissions shall not exceed the following limits.

EU ID 901 – Cooling Tower No. 1

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
PM	6.6	16.1
PM_{10}	4.7	11.3
$PM_{2.5}$	0.01	0.04

EU ID 902 – Cooling Tower No. 2

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
PM	6.0	18.7
PM_{10}	4.2	13.2
$PM_{2.5}$	0.01	0.04

R. Compliance with the circulation and emission limits for each cooling tower shall be demonstrated by either: the manufacturer's visible capacity rating stamped, tagged or displayed by other means on the pump equipment; or by a copy of the manufacturer's performance data, in either case representing that the total combined pump capacity cannot exceed the permitted circulation rates of 2,592,000 gallons per hour for Cooling Tower #1 and 3,264,000 gallons per hour for Cooling Tower #2. The pump model or serial number must be identified on the pump system. The only records required by this condition are, in the event that the manufacturer's visible capacity ratings are not visibly discernible on the pump, a copy of the manufacturer's performance data.

EUG NO. 10 – GASOLINE STORAGE TANK, and AMMONIA FUGITIVES

S. The facility is subject to 40 CFR 63, Subpart CCCCCC, National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities, including but not limited to the following. [40 CFR 63, Subpart CCCCCC]

§63.11111 Am I subject to the requirements in this subpart?
§63.11112 What parts of my affected source does this subpart cover?
§63.11113 When do I have to comply with this subpart?
§63.11115 What are my general duties to minimize emissions?
§63.11116 Requirements for facilities with monthly throughput of less than 10,000 gallons of gasoline. Note that §63.11116(b) exempts the source from the requirement to submit notifications or reports as specified in §63.11125, §63.11126, or subpart A of this part, but you must have records available within 24 hours of a request by the Administrator to document your gasoline throughput.
§63.11130 What parts of the General Provisions apply to me?
§63.11132 What definitions apply to this subpart?
Table 3 to Subpart CCCCCC of Part 63—Applicability of General Provisions

T. Compliance with the emission limit in the following table shall be demonstrated by limiting the monthly throughput of gasoline to 10,000 gallons. Permittee shall maintain records of gasoline throughput.

EU ID 1002 – Gasoline Storage Tank

Pollutant	**Emissions**	
	Maximum (lb/hr)	**Annual (ton/yr)**
VOC	3.9	0.4

U. The permittee shall maintain an accurate count of components in ammonia service, so as to limit hourly and annual emissions to the values specified in the following table.

EU ID 1003 – Ammonia Fugitives

Pollutant	**Emissions**	
	Maximum (lb/hr)	**Annual (ton/yr)**
NH_3	28.5	121.7

2. Permittee is subject to all applicable terms and conditions of the Consent Decree executed between the US Environmental Protection Agency (EPA) Consent Decree (CD), Case: 5:14-cv-00271-F Document 3-1 filed: 03/18/14, entered by the Court on 5/28/14.

For Nitric Acid Plant #1 (EU ID 301) and Nitric Acid Plant #3 (EU ID 303), the Permittee shall comply with NOx emission limits of 1.0 lb/ton (short-term limit) and 0.60 lb/ton (long-term limit). For EU ID 301 and EU ID 303, the compliance date for the short-term limit is January 1, 2018, and the compliance date for the long term limit is January 1, 2019. "Short-Term NOx Emissions Limit" shall mean a 3-hour rolling average NOx emission limit (rolled hourly) expressed in terms of pounds of NOx emitted per ton of 100% Nitric Acid Produced (lbs/ton). This limit excludes periods of startup, shutdown, and malfunction. "Long-Term NOx Emissions Limit" shall mean a 365-day rolling average NOx emission limit (rolled daily) expressed as pounds of NOx emitted per ton of 100% Nitric Acid Produced (lbs/ton). This limit applies at all times, and includes periods of startup, shutdown, and malfunction. The Permittee shall demonstrate compliance with this condition by complying with all applicable requirements for affected facilities under the NSPS at 40 C.F.R. Part 60, Subparts A and G, including but not limited to the obligation to install, calibrate, maintain, and operate a CEMS at EU ID 301 and EU ID 303 pursuant to 40 C.F.R. Part 60 Subparts A and G, except as modified by Attachment C (the CEMS Plan) of the Federal Consent Decree, which is hereby incorporated into this permit as a federally enforceable permit condition.

The NOx emission requirements in this permit were established pursuant to a negotiated Consent Decree with the United States, the State of Alabama, and the ODEQ, and shall not be relaxed without the approval of EPA and the ODEQ.

3. The fuel-burning equipment shall be fired with pipeline natural gas having 0.25 grains/100 scf or less total sulfur. EU ID 101 Ammonia Plant #4 Primary Reformer may be fired on either natural gas or a combination of natural gas, waste gas generated from the Natural Gas Desulfurization Unit, and process off-gas (e.g., purge gas). Compliance with the sulfur limit on pipeline gas can be shown by the following methods: a current gas company bill, lab analysis, stain-tube analysis, gas contract, tariff sheet, or other approved methods. Compliance shall be demonstrated at least once per calendar year. [OAC 252:100-8-6(a)(1)]

4. The permittee shall conduct only the processes associated with the manufacture of ammonia, ammonium nitrate, urea, nitric acid, and by-products including carbon dioxide. [OAC 252:100-8-6(a)(1)]

5. Each Emissions Unit (EU) shall be clearly labeled with the EU number on the unit in a conspicuous location that can be easily accessed for inspection. For units not having emissions controls, the EU label shall be located as near the emissions stack as practical, considering safety and ease of inspection. [OAC 252:100-43]

6. The permittee shall be authorized to operate the sources 24 hours per day, every day of the year. [OAC 252:100-8-6(a)(1)]

7. Monitoring. [OAC 252:100-8-6(a)(1)], [OAC 252:100-43]

   A. Good Combustion Practices shall be followed for the Ammonia Plant #4 Primary Reformer, Ammonia Plant #4 - Ammonia Converter Startup Heater, Boilers #1, #2, and #3, and Nitric Acid Preheaters #1 and #4; Emission Point IDs #101, #107, #801, #802, #803, #401 and #403, respectively. Continuous compliance for these sources is demonstrated by the requirements contained herein.

      i. The permittee shall maintain and operate combustion equipment to achieve optimum combustion efficiency. The permittee shall perform periodic and preventive maintenance and tune-ups using PEA testing, as necessary, but no less frequent than manufacturer's recommendations.

ii. The permittee shall perform weekly inspections of the combustion controls for proper operation. Burners shall be inspected during shutdown. Permittee shall immediately perform any maintenance necessary to maintain equipment at the performance standards specified by the manufacturer(s).

B. Good Operation Practices – All Emission Point IDs.
The permittee shall exercise all reasonable and necessary operational and preventive measures and actions to control emissions within the BACT limits specified in Specific Condition No. 1 including, but not limited to, minimizing startup and shutdown times and reducing throughput.

8. Compliance Assurance Monitoring (CAM). [OAC 252:100-8-6(a)(1)], [OAC 252:100-43]

A. Granulator Scrubbers #1, #2, and #3, EU IDs 701, 702, and 703. The permittee shall limit the hourly production rate of dry ammonium nitrate at the granulator or prill tower to 16.7 tons per hour. Compliance with the production limit shall be demonstrated by dividing the actual daily dry ammonium nitrate production total by the process equipment operating hours for that day. The permittee shall perform monthly opacity measurements using EPA Method 9 and conduct initial performance testing to correlate the PM limit to an opacity action level. Within sixty days (60) of startup, permittee shall submit, for approval by the Air Quality Division, a proposed monitoring plan that includes, in addition to the opacity monitoring requirement of this condition, at least one secondary monitoring parameter to be used as a surrogate or parametric monitoring to document continuous compliance with the permit limits.

B. Nitric Acid Plants #1 and #4. The CEMS shall be fully functional and properly operating at startup of the nitric acid plants. Permittee shall follow the requirements 40 C.F.R. §60, Subparts A and G, except as modified by Attachment C (the CEMS Plan) of the Federal Consent Decree. [40 CFR 64.4(e)]

C. The permittee shall comply with all applicable requirements of CAM including but not limited to the following. [40 CFR 64.1 to 64.9]

i. §64.7 Operation of approved monitoring;
ii. §64.8 Quality improvement plan (QIP) requirements; and
iii. §64.9 Reporting and recordkeeping requirements.

9. Maintenance and Monitoring of Controls. [OAC 252:100-43]

A. Permittee shall maintain at the facility, an operation and maintenance plan that includes, at a minimum, the following elements.

i. A visual inspection of each pollution control device shall be performed at a frequency recommended by the manufacturer(s), but no less than weekly. The pollution control devices shall be maintained and operated as recommended by the manufacturers to maintain the required efficiency, including the recommended operating parameters such as, but not limited to, operating pressures/temperatures. Expendable components shall be replaced on a frequency recommended by the manufacturer, or sooner if necessary. The capture system and the housing for the controls shall be constructed and maintained to prevent bypass of emissions.

ii. A complete preventive maintenance inspection of the pollution control device shall be performed semi-annually, or at intervals recommended by the manufacturer, whichever occurs more frequently.

iii. In the event of any malfunction of pollution control equipment which results in an exceedance of any permit limit, the permittee shall immediately shut down the affected emissions unit(s) and perform any repairs necessary to restore the performance of the pollution control equipment to the permitted standard(s), prior to returning the emissions units back to production.

10. Nitric Acid Plant #1, Nitric Acid Plant #4, and Ammonia Plant #4 Primary Reformer. Within 60 days after achieving the maximum production rate at which the source will be operated, but not later than 180 days after initial startup, and at other such times as directed by the AQD, the permittee shall conduct performance testing as follows and furnish a written report to the AQD. CO emissions from the primary reformer shall be tested once every five years during the term of the permit, with the results included in the renewal application. Testing shall be conducted while a process unit is being operated at least 90% of maximum hourly capacity. A sampling protocol and notification of testing date(s) shall be submitted at least 30 days in advance of commencement of testing. The following USEPA methods shall be used for testing of emissions, unless otherwise approved by Air Quality. [OAC 252:100-43]

Point ID	Description	Pollutant Tested	Test Methods Required
101	Ammonia Plant #4 Primary Reformer	NO_X - UPL Normal; CO; NH_3	1 – 4, 7E, 10, 350.2 or 350.3
301	Nitric Acid Plant #1 Adsorption Tower Tail Gas	CO; NH_3	1 – 4 and 10, 350.2 or 350.3
303	Nitric Acid Plant #4 Adsorption Tower Tail Gas	NH_3	350.2 or 350.3

11. The permittee shall keep records of operations as listed below to verify Insignificant Activities. These records shall be kept on-site for a period of at least five years following dates of recording and shall be made available to regulatory personnel upon request. No recordkeeping is required for those operations which qualify as Trivial Activities.
[OAC 252:100-8-2], [OAC 252:100-8-6 (a)(3)(B)]

Activities having the potential to emit no more than 5 TPY (actual) of any criteria pollutant require records sufficient to verify actual emissions.

Name and Contents	**Capacity (gallons)**
Urea Plant Feed (Ammonia Head Tank)	15,857
CO_2 Plant Ammonia Recovery Tank	2,024
Ammonium Nitrate Plant #1 Rundown Tank	950
Ammonium Nitrate Plant #2 Rundown Tank	950
OBT Mix Tank	36,500
Ammonium Nitrate Storage Tank	267,314
U.A.N. Blend Tank	57,337
2 – U.A.N. Storage Tanks (AS & DS)	3,760,346 each
2 – U.A.N. Storage Tanks (BS & CS)	116,471 each
Diesel Fuel Storage	1,000

Granular Ammonium Nitrate Storage, Handling, and Loading/Unloading operations
Ammonia Truck and Railcar Loading
Ammonia Plant #4 Purge Gas Scrubber Vent
Ammonia Plant #4 Hydrogen Recovery Unit – Mole Sieve Regeneration
Ammonia Plants #4 – Syn-Gas Startup/Shutdown Vents 110c
Portable Flare
Maintenance Painting
Ammonia Storage Tank Flare Pilot - 0.0152 MMBtu/hour
Ammonia Nitrate Plants #1 and #2 Neutralizers
Ammonia Flare Pilot - 0.0683 MMBtu/hour
Pilot (0.39 MMBtu/hr) - Ammonia Plant #4 Startup/Shutdown Vent Flare (EU ID 110)
Catalyst Building Fume Hood
Catalyst Building Pelletizing Room Exhaust Vent
Catalyst Screener

12. The permittee shall keep records of facility operations as listed below. These records shall be retained on-site for a period of at least five years following the dates of recording and shall be made available to regulatory personnel upon request. [OAC 252:100-8-6 (a)(3)(B)]

    a. Total throughput of raw materials and products having limits specified in Condition No. 1; hourly, daily, and 12-month rolling cumulative total, as specified in the condition for each limit.
    b. Records of monitoring and inspection of all air pollution control equipment required by the conditions of this permit.
    c. Calculations showing compliance with all specific conditions that require calculations.
    d. For the fuel(s) burned, the appropriate document(s) as described in Specific Condition No. 3.

e. Records required by NSPS Dc & G.
f. Records required for CEMS operations.
g. Records required for CAM.
h. Records required by NESHAP CCCCCC and Specific Condition No. 1.T.
i. Records of periodic and preventative maintenance, tune-ups, burner control inspections, and burner inspections, as specified for the combustion sources listed in Specific Condition 7.A.

13. The Permit Shield (Standard Conditions, Section VI) is extended to the following requirements that have been determined to be inapplicable to this facility.

[OAC 252:100-8-6(d)(2)]

a.	OAC 252:100-7	Permits for Minor Facilities
b.	OAC 252:100-11	Alternative Emissions Reduction
c.	OAC 252:100-15	Mobile Sources
d.	OAC 252:100-17	Incinerators
e.	OAC 252:100-23	Cotton Gins
f.	OAC 252:100-24	Particulate Emissions From Grain, Feed, or Seed Operations
g.	OAC 252:100-35	Carbon Monoxide
h.	OAC 252:100-39	Nonattainment Areas
i.	OAC 252:100-47	Landfills
j.	40 CFR Part 72	Acid Rain

14. The permittee shall submit an updated operating permit application for the Title V operating permit within 180 days of issuance of this construction permit. [OAC 252:100-8-4(b)(5)(A)]

MAJOR SOURCE AIR QUALITY PERMIT
STANDARD CONDITIONS
(June 21, 2016)

SECTION I. DUTY TO COMPLY

A. This is a permit to operate / construct this specific facility in accordance with the federal Clean Air Act (42 U.S.C. 7401, et al.) and under the authority of the Oklahoma Clean Air Act and the rules promulgated there under. [Oklahoma Clean Air Act, 27A O.S. § 2-5-112]

B. The issuing Authority for the permit is the Air Quality Division (AQD) of the Oklahoma Department of Environmental Quality (DEQ). The permit does not relieve the holder of the obligation to comply with other applicable federal, state, or local statutes, regulations, rules, or ordinances. [Oklahoma Clean Air Act, 27A O.S. § 2-5-112]

C. The permittee shall comply with all conditions of this permit. Any permit noncompliance shall constitute a violation of the Oklahoma Clean Air Act and shall be grounds for enforcement action, permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application. All terms and conditions are enforceable by the DEQ, by the Environmental Protection Agency (EPA), and by citizens under section 304 of the Federal Clean Air Act (excluding state-only requirements). This permit is valid for operations only at the specific location listed.
[40 C.F.R. §70.6(b), OAC 252:100-8-1.3 and OAC 252:100-8-6(a)(7)(A) and (b)(1)]

D. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in assessing penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continuing operations. [OAC 252:100-8-6(a)(7)(B)]

SECTION II. REPORTING OF DEVIATIONS FROM PERMIT TERMS

A. Any exceedance resulting from an emergency and/or posing an imminent and substantial danger to public health, safety, or the environment shall be reported in accordance with Section XIV (Emergencies). [OAC 252:100-8-6(a)(3)(C)(iii)(I) & (II)]

B. Deviations that result in emissions exceeding those allowed in this permit shall be reported consistent with the requirements of OAC 252:100-9, Excess Emission Reporting Requirements.
[OAC 252:100-8-6(a)(3)(C)(iv)]

C. Every written report submitted under this section shall be certified as required by Section III (Monitoring, Testing, Recordkeeping & Reporting), Paragraph F.
[OAC 252:100-8-6(a)(3)(C)(iv)]

SECTION III. MONITORING, TESTING, RECORDKEEPING & REPORTING

A. The permittee shall keep records as specified in this permit. These records, including monitoring data and necessary support information, shall be retained on-site or at a nearby field office for a period of at least five years from the date of the monitoring sample, measurement, report, or application, and shall be made available for inspection by regulatory personnel upon request. Support information includes all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Where appropriate, the permit may specify that records may be maintained in computerized form.

[OAC 252:100-8-6 (a)(3)(B)(ii), OAC 252:100-8-6(c)(1), and OAC 252:100-8-6(c)(2)(B)]

B. Records of required monitoring shall include:

(1) the date, place and time of sampling or measurement;
(2) the date or dates analyses were performed;
(3) the company or entity which performed the analyses;
(4) the analytical techniques or methods used;
(5) the results of such analyses; and
(6) the operating conditions existing at the time of sampling or measurement.

[OAC 252:100-8-6(a)(3)(B)(i)]

C. No later than 30 days after each six (6) month period, after the date of the issuance of the original Part 70 operating permit or alternative date as specifically identified in a subsequent Part 70 operating permit, the permittee shall submit to AQD a report of the results of any required monitoring. All instances of deviations from permit requirements since the previous report shall be clearly identified in the report. Submission of these periodic reports will satisfy any reporting requirement of Paragraph E below that is duplicative of the periodic reports, if so noted on the submitted report. [OAC 252:100-8-6(a)(3)(C)(i) and (ii)]

D. If any testing shows emissions in excess of limitations specified in this permit, the owner or operator shall comply with the provisions of Section II (Reporting Of Deviations From Permit Terms) of these standard conditions. [OAC 252:100-8-6(a)(3)(C)(iii)]

E. In addition to any monitoring, recordkeeping or reporting requirement specified in this permit, monitoring and reporting may be required under the provisions of OAC 252:100-43, Testing, Monitoring, and Recordkeeping, or as required by any provision of the Federal Clean Air Act or Oklahoma Clean Air Act. [OAC 252:100-43]

F. Any Annual Certification of Compliance, Semi Annual Monitoring and Deviation Report, Excess Emission Report, and Annual Emission Inventory submitted in accordance with this permit shall be certified by a responsible official. This certification shall be signed by a responsible official, and shall contain the following language: "I certify, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete."

[OAC 252:100-8-5(f), OAC 252:100-8-6(a)(3)(C)(iv), OAC 252:100-8-6(c)(1), OAC 252:100-9-7(e), and OAC 252:100-5-2.1(f)]

G. Any owner or operator subject to the provisions of New Source Performance Standards ("NSPS") under 40 CFR Part 60 or National Emission Standards for Hazardous Air Pollutants ("NESHAPs") under 40 CFR Parts 61 and 63 shall maintain a file of all measurements and other information required by the applicable general provisions and subpart(s). These records shall be maintained in a permanent file suitable for inspection, shall be retained for a period of at least five years as required by Paragraph A of this Section, and shall include records of the occurrence and duration of any start-up, shutdown, or malfunction in the operation of an affected facility, any malfunction of the air pollution control equipment; and any periods during which a continuous monitoring system or monitoring device is inoperative.
[40 C.F.R. §§60.7 and 63.10, 40 CFR Parts 61, Subpart A, and OAC 252:100, Appendix Q]

H. The permittee of a facility that is operating subject to a schedule of compliance shall submit to the DEQ a progress report at least semi-annually. The progress reports shall contain dates for achieving the activities, milestones or compliance required in the schedule of compliance and the dates when such activities, milestones or compliance was achieved. The progress reports shall also contain an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted. [OAC 252:100-8-6(c)(4)]

I. All testing must be conducted under the direction of qualified personnel by methods approved by the Division Director. All tests shall be made and the results calculated in accordance with standard test procedures. The use of alternative test procedures must be approved by EPA. When a portable analyzer is used to measure emissions it shall be setup, calibrated, and operated in accordance with the manufacturer's instructions and in accordance with a protocol meeting the requirements of the "AQD Portable Analyzer Guidance" document or an equivalent method approved by Air Quality.
[OAC 252:100-8-6(a)(3)(A)(iv), and OAC 252:100-43]

J. The reporting of total particulate matter emissions as required in Part 7 of OAC 252:100-8 (Permits for Part 70 Sources), OAC 252:100-19 (Control of Emission of Particulate Matter), and OAC 252:100-5 (Emission Inventory), shall be conducted in accordance with applicable testing or calculation procedures, modified to include back-half condensables, for the concentration of particulate matter less than 10 microns in diameter (PM_{10}). NSPS may allow reporting of only particulate matter emissions caught in the filter (obtained using Reference Method 5).

K. The permittee shall submit to the AQD a copy of all reports submitted to the EPA as required by 40 C.F.R. Part 60, 61, and 63, for all equipment constructed or operated under this permit subject to such standards. [OAC 252:100-8-6(c)(1) and OAC 252:100, Appendix Q]

SECTION IV. COMPLIANCE CERTIFICATIONS

A. No later than 30 days after each anniversary date of the issuance of the original Part 70 operating permit or alternative date as specifically identified in a subsequent Part 70 operating permit, the permittee shall submit to the AQD, with a copy to the US EPA, Region 6, a certification of compliance with the terms and conditions of this permit and of any other applicable requirements which have become effective since the issuance of this permit.
[OAC 252:100-8-6(c)(5)(A), and (D)]

B. The compliance certification shall describe the operating permit term or condition that is the basis of the certification; the current compliance status; whether compliance was continuous or intermittent; the methods used for determining compliance, currently and over the reporting period. The compliance certification shall also include such other facts as the permitting authority may require to determine the compliance status of the source.

[OAC 252:100-8-6(c)(5)(C)(i)-(v)]

C. The compliance certification shall contain a certification by a responsible official as to the results of the required monitoring. This certification shall be signed by a responsible official, and shall contain the following language: "I certify, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete." [OAC 252:100-8-5(f) and OAC 252:100-8-6(c)(1)]

D. Any facility reporting noncompliance shall submit a schedule of compliance for emissions units or stationary sources that are not in compliance with all applicable requirements. This schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any applicable requirements for which the emissions unit or stationary source is in noncompliance. This compliance schedule shall resemble and be at least as stringent as that contained in any judicial consent decree or administrative order to which the emissions unit or stationary source is subject. Any such schedule of compliance shall be supplemental to, and shall not sanction noncompliance with, the applicable requirements on which it is based, except that a compliance plan shall not be required for any noncompliance condition which is corrected within 24 hours of discovery.

[OAC 252:100-8-5(e)(8)(B) and OAC 252:100-8-6(c)(3)]

SECTION V. REQUIREMENTS THAT BECOME APPLICABLE DURING THE PERMIT TERM

The permittee shall comply with any additional requirements that become effective during the permit term and that are applicable to the facility. Compliance with all new requirements shall be certified in the next annual certification. [OAC 252:100-8-6(c)(6)]

SECTION VI. PERMIT SHIELD

A. Compliance with the terms and conditions of this permit (including terms and conditions established for alternate operating scenarios, emissions trading, and emissions averaging, but excluding terms and conditions for which the permit shield is expressly prohibited under OAC 252:100-8) shall be deemed compliance with the applicable requirements identified and included in this permit. [OAC 252:100-8-6(d)(1)]

B. Those requirements that are applicable are listed in the Standard Conditions and the Specific Conditions of this permit. Those requirements that the applicant requested be determined as not applicable are summarized in the Specific Conditions of this permit. [OAC 252:100-8-6(d)(2)]

SECTION VII. ANNUAL EMISSIONS INVENTORY & FEE PAYMENT

The permittee shall file with the AQD an annual emission inventory and shall pay annual fees based on emissions inventories. The methods used to calculate emissions for inventory purposes shall be based on the best available information accepted by AQD.
[OAC 252:100-5-2.1, OAC 252:100-5-2.2, and OAC 252:100-8-6(a)(8)]

SECTION VIII. TERM OF PERMIT

A. Unless specified otherwise, the term of an operating permit shall be five years from the date of issuance. [OAC 252:100-8-6(a)(2)(A)]

B. A source's right to operate shall terminate upon the expiration of its permit unless a timely and complete renewal application has been submitted at least 180 days before the date of expiration. [OAC 252:100-8-7.1(d)(1)]

C. A duly issued construction permit or authorization to construct or modify will terminate and become null and void (unless extended as provided in OAC 252:100-8-1.4(b)) if the construction is not commenced within 18 months after the date the permit or authorization was issued, or if work is suspended for more than 18 months after it is commenced. [OAC 252:100-8-1.4(a)]

D. The recipient of a construction permit shall apply for a permit to operate (or modified operating permit) within 180 days following the first day of operation. [OAC 252:100-8-4(b)(5)]

SECTION IX. SEVERABILITY

The provisions of this permit are severable and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.
[OAC 252:100-8-6 (a)(6)]

SECTION X. PROPERTY RIGHTS

A. This permit does not convey any property rights of any sort, or any exclusive privilege.
[OAC 252:100-8-6(a)(7)(D)]

B. This permit shall not be considered in any manner affecting the title of the premises upon which the equipment is located and does not release the permittee from any liability for damage to persons or property caused by or resulting from the maintenance or operation of the equipment for which the permit is issued. [OAC 252:100-8-6(c)(6)]

SECTION XI. DUTY TO PROVIDE INFORMATION

A. The permittee shall furnish to the DEQ, upon receipt of a written request and within sixty (60) days of the request unless the DEQ specifies another time period, any information that the DEQ may request to determine whether cause exists for modifying, reopening, revoking, reissuing, terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the DEQ copies of records required to be kept by the permit.

[OAC 252:100-8-6(a)(7)(E)]

B. The permittee may make a claim of confidentiality for any information or records submitted pursuant to 27A O.S. § 2-5-105(18). Confidential information shall be clearly labeled as such and shall be separable from the main body of the document such as in an attachment.

[OAC 252:100-8-6(a)(7)(E)]

C. Notification to the AQD of the sale or transfer of ownership of this facility is required and shall be made in writing within thirty (30) days after such sale or transfer.

[Oklahoma Clean Air Act, 27A O.S. § 2-5-112(G)]

SECTION XII. REOPENING, MODIFICATION & REVOCATION

A. The permit may be modified, revoked, reopened and reissued, or terminated for cause. Except as provided for minor permit modifications, the filing of a request by the permittee for a permit modification, revocation and reissuance, termination, notification of planned changes, or anticipated noncompliance does not stay any permit condition.

[OAC 252:100-8-6(a)(7)(C) and OAC 252:100-8-7.2(b)]

B. The DEQ will reopen and revise or revoke this permit prior to the expiration date in the following circumstances: [OAC 252:100-8-7.3 and OAC 252:100-8-7.4(a)(2)]

(1) Additional requirements under the Clean Air Act become applicable to a major source category three or more years prior to the expiration date of this permit. No such reopening is required if the effective date of the requirement is later than the expiration date of this permit.
(2) The DEQ or the EPA determines that this permit contains a material mistake or that the permit must be revised or revoked to assure compliance with the applicable requirements.
(3) The DEQ or the EPA determines that inaccurate information was used in establishing the emission standards, limitations, or other conditions of this permit. The DEQ may revoke and not reissue this permit if it determines that the permittee has submitted false or misleading information to the DEQ.
(4) DEQ determines that the permit should be amended under the discretionary reopening provisions of OAC 252:100-8-7.3(b).

C. The permit may be reopened for cause by EPA, pursuant to the provisions of OAC 100-8-7.3(d). [OAC 100-8-7.3(d)]

D. The permittee shall notify AQD before making changes other than those described in Section XVIII (Operational Flexibility), those qualifying for administrative permit amendments, or those defined as an Insignificant Activity (Section XVI) or Trivial Activity (Section XVII). The notification should include any changes which may alter the status of a "grandfathered source," as defined under AQD rules. Such changes may require a permit modification.

[OAC 252:100-8-7.2(b) and OAC 252:100-5-1.1]

E. Activities that will result in air emissions that exceed the trivial/insignificant levels and that are not specifically approved by this permit are prohibited. [OAC 252:100-8-6(c)(6)]

SECTION XIII. INSPECTION & ENTRY

A. Upon presentation of credentials and other documents as may be required by law, the permittee shall allow authorized regulatory officials to perform the following (subject to the permittee's right to seek confidential treatment pursuant to 27A O.S. Supp. 1998, § 2-5-105(17) for confidential information submitted to or obtained by the DEQ under this section):

(1) enter upon the permittee's premises during reasonable/normal working hours where a source is located or emissions-related activity is conducted, or where records must be kept under the conditions of the permit;
(2) have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;
(3) inspect, at reasonable times and using reasonable safety practices, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
(4) as authorized by the Oklahoma Clean Air Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit.

[OAC 252:100-8-6(c)(2)]

SECTION XIV. EMERGENCIES

A. Any exceedance resulting from an emergency shall be reported to AQD promptly but no later than 4:30 p.m. on the next working day after the permittee first becomes aware of the exceedance. This notice shall contain a description of the emergency, the probable cause of the exceedance, any steps taken to mitigate emissions, and corrective actions taken.

[OAC 252:100-8-6 (a)(3)(C)(iii)(I) and (IV)]

B. Any exceedance that poses an imminent and substantial danger to public health, safety, or the environment shall be reported to AQD as soon as is practicable; but under no circumstance shall notification be more than 24 hours after the exceedance. [OAC 252:100-8-6(a)(3)(C)(iii)(II)]

C. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error. [OAC 252:100-8-2]

D. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that: [OAC 252:100-8-6 (e)(2)]

(1) an emergency occurred and the permittee can identify the cause or causes of the emergency;

(2) the permitted facility was at the time being properly operated;
(3) during the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit.

E. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency shall have the burden of proof. [OAC 252:100-8-6(e)(3)]

F. Every written report or document submitted under this section shall be certified as required by Section III (Monitoring, Testing, Recordkeeping & Reporting), Paragraph F.
[OAC 252:100-8-6(a)(3)(C)(iv)]

SECTION XV. RISK MANAGEMENT PLAN

The permittee, if subject to the provision of Section 112(r) of the Clean Air Act, shall develop and register with the appropriate agency a risk management plan by June 20, 1999, or the applicable effective date. [OAC 252:100-8-6(a)(4)]

SECTION XVI. INSIGNIFICANT ACTIVITIES

Except as otherwise prohibited or limited by this permit, the permittee is hereby authorized to operate individual emissions units that are either on the list in Appendix I to OAC Title 252, Chapter 100, or whose actual calendar year emissions do not exceed any of the limits below. Any activity to which a State or Federal applicable requirement applies is not insignificant even if it meets the criteria below or is included on the insignificant activities list.

(1) 5 tons per year of any one criteria pollutant.
(2) 2 tons per year for any one hazardous air pollutant (HAP) or 5 tons per year for an aggregate of two or more HAP's, or 20 percent of any threshold less than 10 tons per year for single HAP that the EPA may establish by rule.

[OAC 252:100-8-2 and OAC 252:100, Appendix I]

SECTION XVII. TRIVIAL ACTIVITIES

Except as otherwise prohibited or limited by this permit, the permittee is hereby authorized to operate any individual or combination of air emissions units that are considered inconsequential and are on the list in Appendix J. Any activity to which a State or Federal applicable requirement applies is not trivial even if included on the trivial activities list.
[OAC 252:100-8-2 and OAC 252:100, Appendix J]

SECTION XVIII. OPERATIONAL FLEXIBILITY

A. A facility may implement any operating scenario allowed for in its Part 70 permit without the need for any permit revision or any notification to the DEQ (unless specified otherwise in the permit). When an operating scenario is changed, the permittee shall record in a log at the facility the scenario under which it is operating. [OAC 252:100-8-6(a)(10) and (f)(1)]

B. The permittee may make changes within the facility that:

(1) result in no net emissions increases,
(2) are not modifications under any provision of Title I of the federal Clean Air Act, and
(3) do not cause any hourly or annual permitted emission rate of any existing emissions unit to be exceeded;

provided that the facility provides the EPA and the DEQ with written notification as required below in advance of the proposed changes, which shall be a minimum of seven (7) days, or twenty four (24) hours for emergencies as defined in OAC 252:100-8-6 (e). The permittee, the DEQ, and the EPA shall attach each such notice to their copy of the permit. For each such change, the written notification required above shall include a brief description of the change within the permitted facility, the date on which the change will occur, any change in emissions, and any permit term or condition that is no longer applicable as a result of the change. The permit shield provided by this permit does not apply to any change made pursuant to this paragraph. [OAC 252:100-8-6(f)(2)]

SECTION XIX. OTHER APPLICABLE & STATE-ONLY REQUIREMENTS

A. The following applicable requirements and state-only requirements apply to the facility unless elsewhere covered by a more restrictive requirement:

(1) Open burning of refuse and other combustible material is prohibited except as authorized in the specific examples and under the conditions listed in the Open Burning Subchapter. [OAC 252:100-13]

(2) No particulate emissions from any fuel-burning equipment with a rated heat input of 10 MMBTUH or less shall exceed 0.6 lb/MMBTU. [OAC 252:100-19]

(3) For all emissions units not subject to an opacity limit promulgated under 40 C.F.R., Part 60, NSPS, no discharge of greater than 20% opacity is allowed except for: [OAC 252:100-25]

(a) Short-term occurrences which consist of not more than one six-minute period in any consecutive 60 minutes, not to exceed three such periods in any consecutive 24 hours. In no case shall the average of any six-minute period exceed 60% opacity;
(b) Smoke resulting from fires covered by the exceptions outlined in OAC 252:100-13-7;
(c) An emission, where the presence of uncombined water is the only reason for failure to meet the requirements of OAC 252:100-25-3(a); or
(d) Smoke generated due to a malfunction in a facility, when the source of the fuel producing the smoke is not under the direct and immediate control of the facility and the immediate constriction of the fuel flow at the facility would produce a hazard to life and/or property.

(4) No visible fugitive dust emissions shall be discharged beyond the property line on which the emissions originate in such a manner as to damage or to interfere with the use of

adjacent properties, or cause air quality standards to be exceeded, or interfere with the maintenance of air quality standards. [OAC 252:100-29]

(5) No sulfur oxide emissions from new gas-fired fuel-burning equipment shall exceed 0.2 lb/MMBTU. No existing source shall exceed the listed ambient air standards for sulfur dioxide. [OAC 252:100-31]

(6) Volatile Organic Compound (VOC) storage tanks built after December 28, 1974, and with a capacity of 400 gallons or more storing a liquid with a vapor pressure of 1.5 psia or greater under actual conditions shall be equipped with a permanent submerged fill pipe or with a vapor-recovery system. [OAC 252:100-37-15(b)]

(7) All fuel-burning equipment shall at all times be properly operated and maintained in a manner that will minimize emissions of VOCs. [OAC 252:100-37-36]

SECTION XX. STRATOSPHERIC OZONE PROTECTION

A. The permittee shall comply with the following standards for production and consumption of ozone-depleting substances: [40 CFR 82, Subpart A]

(1) Persons producing, importing, or placing an order for production or importation of certain class I and class II substances, HCFC-22, or HCFC-141b shall be subject to the requirements of §82.4;
(2) Producers, importers, exporters, purchasers, and persons who transform or destroy certain class I and class II substances, HCFC-22, or HCFC-141b are subject to the recordkeeping requirements at §82.13; and
(3) Class I substances (listed at Appendix A to Subpart A) include certain CFCs, Halons, HBFCs, carbon tetrachloride, trichloroethane (methyl chloroform), and bromomethane (Methyl Bromide). Class II substances (listed at Appendix B to Subpart A) include HCFCs.

B. If the permittee performs a service on motor (fleet) vehicles when this service involves an ozone-depleting substance refrigerant (or regulated substitute substance) in the motor vehicle air conditioner (MVAC), the permittee is subject to all applicable requirements. Note: The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed. The term "MVAC" as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo, or the system used on passenger buses using HCFC-22 refrigerant. [40 CFR 82, Subpart B]

C. The permittee shall comply with the following standards for recycling and emissions reduction except as provided for MVACs in Subpart B: [40 CFR 82, Subpart F]

(1) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to § 82.156;
(2) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to § 82.158;
(3) Persons performing maintenance, service, repair, or disposal of appliances must be

certified by an approved technician certification program pursuant to § 82.161;

(4) Persons disposing of small appliances, MVACs, and MVAC-like appliances must comply with record-keeping requirements pursuant to § 82.166;

(5) Persons owning commercial or industrial process refrigeration equipment must comply with leak repair requirements pursuant to § 82.158; and

(6) Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to § 82.166.

SECTION XXI. TITLE V APPROVAL LANGUAGE

A. DEQ wishes to reduce the time and work associated with permit review and, wherever it is not inconsistent with Federal requirements, to provide for incorporation of requirements established through construction permitting into the Source's Title V permit without causing redundant review. Requirements from construction permits may be incorporated into the Title V permit through the administrative amendment process set forth in OAC 252:100-8-7.2(a) only if the following procedures are followed:

(1) The construction permit goes out for a 30-day public notice and comment using the procedures set forth in 40 C.F.R. § 70.7(h)(1). This public notice shall include notice to the public that this permit is subject to EPA review, EPA objection, and petition to EPA, as provided by 40 C.F.R. § 70.8; that the requirements of the construction permit will be incorporated into the Title V permit through the administrative amendment process; that the public will not receive another opportunity to provide comments when the requirements are incorporated into the Title V permit; and that EPA review, EPA objection, and petitions to EPA will not be available to the public when requirements from the construction permit are incorporated into the Title V permit.

(2) A copy of the construction permit application is sent to EPA, as provided by 40 CFR § 70.8(a)(1).

(3) A copy of the draft construction permit is sent to any affected State, as provided by 40 C.F.R. § 70.8(b).

(4) A copy of the proposed construction permit is sent to EPA for a 45-day review period as provided by 40 C.F.R.§ 70.8(a) and (c).

(5) The DEQ complies with 40 C.F.R. § 70.8(c) upon the written receipt within the 45-day comment period of any EPA objection to the construction permit. The DEQ shall not issue the permit until EPA's objections are resolved to the satisfaction of EPA.

(6) The DEQ complies with 40 C.F.R. § 70.8(d).

(7) A copy of the final construction permit is sent to EPA as provided by 40 CFR § 70.8(a).

(8) The DEQ shall not issue the proposed construction permit until any affected State and EPA have had an opportunity to review the proposed permit, as provided by these permit conditions.

(9) Any requirements of the construction permit may be reopened for cause after incorporation into the Title V permit by the administrative amendment process, by DEQ as provided in OAC 252:100-8-7.3(a), (b), and (c), and by EPA as provided in 40 C.F.R. § 70.7(f) and (g).

(10) The DEQ shall not issue the administrative permit amendment if performance tests fail to demonstrate that the source is operating in substantial compliance with all permit requirements.

B. To the extent that these conditions are not followed, the Title V permit must go through the Title V review process.

SECTION XXII. CREDIBLE EVIDENCE

For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any provision of the Oklahoma implementation plan, nothing shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

[OAC 252:100-43-6]

Mr. John Carver, Vice President – Safety and Environmental Compliance
Pryor Chemical Company
P.O. Box 429
Pryor, Oklahoma 74361

RE: Operating Permit No. **2008-100-C (M-6) PSD**
Pryor Chemical Company
Pryor Plant, Mid America Industrial Park
Pryor, Mayes County
Facility ID No.: 1736

Dear Mr. Carver:

Enclosed is the permit authorizing construction of the referenced facility. Please note that this permit is issued subject to standard and specific conditions, which are attached. These conditions must be carefully followed since they define the limits of the permit and will be confirmed by periodic inspections.

Also note that you are required to annually submit an emission inventory for this facility. An emission inventory must be completed on approved AQD forms and submitted (hardcopy or electronically) every year by April 1^{st}. Any questions concerning the form or submittal process should be referred to the Emission Inventory Staff at (405)702-4100.

Thank you for your cooperation in this matter. If we may be of further service, please contact David Pollard at (918) 293-1617 or by mail at DEQ Regional Office at Tulsa, 3105 East Skelly Drive, Suite 200, Tulsa, Oklahoma, 74105.

Sincerely,

Phillip Fielder, P.E.,
Chief Engineer
AIR QUALITY DIVISION

Mr. John Carver, Vice President – Safety and Environmental Compliance
Pryor Chemical Company
P.O. Box 429
Pryor, Oklahoma 74361

Re: Permit Application No. **2008-100-C (M-6) PSD**
Pryor Chemical Company
Pryor Plant, Mid America Industrial Park
Pryor, Mayes County

Dear Mr. Carver:

Air Quality has received the permit application for the referenced facility and completed initial review. This application has been determined to be a [Tier II, Tier III] application. In accordance with 27A O.S. 2-14-301 and 302 and OAC 252:4-7-13(c), the enclosed draft permit is now ready for public review. The requirements for public review of the draft permit include the following steps, which <u>you</u> must accomplish.

1. Publish at least one legal notice (one day) in at least one newspaper of general circulation within the county where the facility is located. (Instructions enclosed)
2. Provide for public review, for a period of 30 days following the date of the newspaper announcement, a copy of the application and draft permit at a convenient location (preferentially at a public location) within the county of the facility.
3. Send AQD a signed affidavit of publication for the notice(s) from Item #1 above within 20 days of publication of the draft permit. Any additional comments or requested changes you have for the draft permit or the application should be submitted within 30 days of publication.

Thank you for your cooperation in this matter. If we may be of further service, please contact David Pollard at (918) 293-1617 or by mail at 3105 E. Skelly Drive, Tulsa, Oklahoma 74105.

Sincerely,

Phillip Fielder, P.E.,
Chief Engineer
AIR QUALITY DIVISION

PART 70 PERMIT

AIR QUALITY DIVISION
STATE OF OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY
707 N. ROBINSON, SUITE 4100
P.O. BOX 1677
OKLAHOMA CITY, OKLAHOMA 73101-1677

Permit No. 2008-100-C (M-6) PSD

Pryor Chemical Company,

having complied with the requirements of the law, is hereby granted permission to construct the Pryor Chemical Plant located in the Pryor – Mid America Industrial Park, Section 3, Township 20 N, Range 19 E, Mayes County, Oklahoma,

subject to standard conditions dated June 21, 2016 and specific conditions, both attached.

In the absence of construction commencement, this permit shall expire 18 months from the issuance date, except as authorized under Section B of the Standard Conditions.

Director, Air Quality Division **Date**